Choose an appropriate method of integration for the following indefinite integral:

\[ \int xe^{-2x} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- [ ] On the **Elementary Antiderivative List**
- [ ] Integration by Substitution
- [ ] Integration by Parts
- [ ] Trigonometric Substitution
- [ ] Partial Fractions

In the answer box below, enter in the following information for the chosen method:

- For an antiderivative on the **Elementary Antiderivative List**, enter in any antiderivative.
- For **Integration by Substitution**, enter in the equation for \( u = \text{formula with } x \).
- For **Integration by Parts**, enter in the equations for \( u \) and \( dv \) separated by commas such as \( u = \text{formula, } dv = \text{formula} \).
- For **Trigonometric Substitution**, enter in the substitution as \( x = a \sin(\theta) \) or \( x = a \tan(\theta) \), where \( a \) is a constant.
- For **Partial Fractions**, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).
2. Choose an appropriate method of integration for the following indefinite integral:
\[ \int x\sqrt{16 - x^2} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- [ ] On the Elementary Antiderivative List
- [ ] Integration by Substitution
- [ ] Integration by Parts
- [ ] Trigonometric Substitution
- [ ] Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the Elementary Antiderivative List, enter in any antiderivative.
- For Integration by Substitution, enter in the equation for \( u = \text{formula with } x \).
- For Integration by Parts, enter in the equations for \( u \) and \( dv \) separated by commas such as \( 'u = \text{formula}, dv = \text{formula}' \).
- For Trigonometric Substitution, enter in the substitution as \( 'x = a\sin(\theta)' \) or \( 'x = a\tan(\theta)' \), where \( a \) is a constant.
- For Partial Fractions, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).


3. Choose an appropriate method of integration for the following indefinite integral:
\[ \int \frac{\ln(x)}{x} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- [ ] On the Elementary Antiderivative List
- [ ] Integration by Substitution
- [ ] Integration by Parts
- [ ] Trigonometric Substitution
- [ ] Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the Elementary Antiderivative List, enter in any antiderivative.
- For Integration by Substitution, enter in the equation for \( u = \text{formula with } x \).
- For Integration by Parts, enter in the equations for \( u \) and \( dv \) separated by commas such as \( 'u = \text{formula}, dv = \text{formula}' \).
- For Trigonometric Substitution, enter in the substitution as \( 'x = a\sin(\theta)' \) or \( 'x = a\tan(\theta)' \), where \( a \) is a constant.
- For Partial Fractions, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).
Choose an appropriate method of integration for the following indefinite integral:

\[ \int \frac{x}{36 + x^2} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the **Elementary Antiderivative List**
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the **Elementary Antiderivative List**, enter in any antiderivative.
- For **Integration by Substitution**, enter in the equation for \( u \) as \( u = \text{formula with } x \).
- For **Integration by Parts**, enter in the equations for \( u \) and \( dv \) separated by commas such as \( u = \text{formula}, \ dv = \text{formula} \).
- For **Trigonometric Substitution**, enter in the substitution as \( x = a \sin(\theta) \) or \( x = a \tan(\theta) \), where \( a \) is a constant.
- For **Partial Fractions**, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).

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Choose an appropriate method of integration for the following indefinite integral:

\[ \int \sqrt{3 - 2x} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the **Elementary Antiderivative List**
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the **Elementary Antiderivative List**, enter in any antiderivative.
- For **Integration by Substitution**, enter in the equation for \( u \) as \( u = \text{formula with } x \).
- For **Integration by Parts**, enter in the equations for \( u \) and \( dv \) separated by commas such as \( u = \text{formula}, \ dv = \text{formula} \).
- For **Trigonometric Substitution**, enter in the substitution as \( x = a \sin(\theta) \) or \( x = a \tan(\theta) \), where \( a \) is a constant.
- For **Partial Fractions**, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).
Choose an appropriate method of integration for the following indefinite integral:

\[ \int \frac{1}{x^2(x^2 + 4)} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the **Elementary Antiderivative List**
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the **Elementary Antiderivative List**, enter in any antiderivative.
- For **Integration by Substitution**, enter in the equation for \( u = \text{formula with } x \).
- For **Integration by Parts**, enter in the equations for \( u \) and \( dv \) separated by commas such as \( u = \text{formula}, dv = \text{formula} \).
- For **Trigonometric Substitution**, enter in the substitution as \( x = a \sin(\theta) \) or \( x = a \tan(\theta) \), where \( a \) is a constant.
- For **Partial Fractions**, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).

---

Choose an appropriate method of integration for the following indefinite integral:

\[ \int \frac{x^2}{\sqrt{9 - x^2}} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the **Elementary Antiderivative List**
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the **Elementary Antiderivative List**, enter in any antiderivative.
- For **Integration by Substitution**, enter in the equation for \( u = \text{formula with } x \).
- For **Integration by Parts**, enter in the equations for \( u \) and \( dv \) separated by commas such as \( u = \text{formula}, dv = \text{formula} \).
- For **Trigonometric Substitution**, enter in the substitution as \( x = a \sin(\theta) \) or \( x = a \tan(\theta) \), where \( a \) is a constant.
- For **Partial Fractions**, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).
Choose an appropriate method of integration for the following indefinite integral:

\[
\int (3x - 2)^4 \, dx
\]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the Elementary Antiderivative List
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the Elementary Antiderivative List, enter in any antiderivative.
- For Integration by Substitution, enter in the equation for \( u = \text{formula with } x \).
- For Integration by Parts, enter in the equations for \( u \) and \( dv \) separated by commas such as \( u = \text{formula}, \, dv = \text{formula} \).
- For Trigonometric Substitution, enter in the substitution as \( x = a \sin(\theta) \) or \( x = a \tan(\theta) \), where \( a \) is a constant.
- For Partial Fractions, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).

---

Choose an appropriate method of integration for the following indefinite integral:

\[
\int \frac{(x + 1)}{(x^2 + 2x + 3)^3} \, dx
\]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the Elementary Antiderivative List
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the Elementary Antiderivative List, enter in any antiderivative.
- For Integration by Substitution, enter in the equation for \( u = \text{formula with } x \).
- For Integration by Parts, enter in the equations for \( u \) and \( dv \) separated by commas such as \( u = \text{formula}, \, dv = \text{formula} \).
- For Trigonometric Substitution, enter in the substitution as \( x = a \sin(\theta) \) or \( x = a \tan(\theta) \), where \( a \) is a constant.
- For Partial Fractions, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).
Choose an appropriate method of integration for the following indefinite integral:

\[ \int \frac{2}{1 - 5x} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the **Elementary Antiderivative List**
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the **Elementary Antiderivative List**, enter in any antiderivative.
- For **Integration by Substitution**, enter in the equation for \( u = \text{formula with } x \).
- For **Integration by Parts**, enter in the equations for \( u = \text{formula} \) and \( dv = \text{formula} \) separated by commas such as ' \( u = \text{formula} \), \( dv = \text{formula} \)'.
- For **Trigonometric Substitution**, enter in the substitution as ' \( x = a \sin(\theta) \)' or ' \( x = a \tan(\theta) \)', where \( a \) is a constant.
- For **Partial Fractions**, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).

\[
\int \frac{1}{x^4 - 16} \, dx
\]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the **Elementary Antiderivative List**
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the **Elementary Antiderivative List**, enter in any antiderivative.
- For **Integration by Substitution**, enter in the equation for \( u = \text{formula with } x \).
- For **Integration by Parts**, enter in the equations for \( u = \text{formula} \) and \( dv = \text{formula} \) separated by commas such as ' \( u = \text{formula} \), \( dv = \text{formula} \)'.
- For **Trigonometric Substitution**, enter in the substitution as ' \( x = a \sin(\theta) \)' or ' \( x = a \tan(\theta) \)', where \( a \) is a constant.
- For **Partial Fractions**, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).
Choose an appropriate method of integration for the following indefinite integral:

\[ \int \frac{\ln(x)}{x^3} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the Elementary Antiderivative List
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the Elementary Antiderivative List, enter in any antiderivative.
- For Integration by Substitution, enter in the equation for \( u \) as \( u = \) formula with \( x \).
- For Integration by Parts, enter in the equations for \( u \) and \( dv \) separated by commas such as \( u = \) formula, \( dv = \) formula.
- For Trigonometric Substitution, enter in the substitution as \( x = a \sin(\theta) \) or \( x = a \tan(\theta) \), where \( a \) is a constant.
- For Partial Fractions, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).

Choose an appropriate method of integration for the following indefinite integral:

\[ \int \frac{1}{x^3 - 36x} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the Elementary Antiderivative List
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the Elementary Antiderivative List, enter in any antiderivative.
- For Integration by Substitution, enter in the equation for \( u \) as \( u = \) formula with \( x \).
- For Integration by Parts, enter in the equations for \( u \) and \( dv \) separated by commas such as \( u = \) formula, \( dv = \) formula.
- For Trigonometric Substitution, enter in the substitution as \( x = a \sin(\theta) \) or \( x = a \tan(\theta) \), where \( a \) is a constant.
- For Partial Fractions, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).
Choose an appropriate method of integration for the following indefinite integral:

$$\int \frac{1}{x^2(x + 2)^2} \, dx$$

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the *Elementary Antiderivative List*
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method:

- For an antiderivative on the *Elementary Antiderivative List*, enter in any antiderivative.
- For *Integration by Substitution*, enter in the equation for $u$ as ' \( u = \text{formula with } x \)'.
- For *Integration by Parts*, enter in the equations for $u$ and $dv$ separated by commas such as ' \( u = \text{formula}, \ dv = \text{formula} \)'.
- For *Trigonometric Substitution*, enter in the substitution as ' \( x = a \sin(\theta) \) ' or ' \( x = a \tan(\theta) \) ', where $a$ is a constant.
- For *Partial Fractions*, enter in the partial fractions form using unknown constants chosen from $A$, $B$, $C$, $D$ or $F$.

---

Choose an appropriate method of integration for the following indefinite integral:

$$\int \frac{1}{9 + x^2} \, dx$$

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the *Elementary Antiderivative List*
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method:

- For an antiderivative on the *Elementary Antiderivative List*, enter in any antiderivative.
- For *Integration by Substitution*, enter in the equation for $u$ as ' \( u = \text{formula with } x \)'.
- For *Integration by Parts*, enter in the equations for $u$ and $dv$ separated by commas such as ' \( u = \text{formula}, \ dv = \text{formula} \)'.
- For *Trigonometric Substitution*, enter in the substitution as ' \( x = a \sin(\theta) \) ' or ' \( x = a \tan(\theta) \) ', where $a$ is a constant.
- For *Partial Fractions*, enter in the partial fractions form using unknown constants chosen from $A$, $B$, $C$, $D$ or $F$. 
Choose an appropriate method of integration for the following indefinite integral:

\[ \int x^2 \sin(3x + 2) \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the **Elementary Antiderivative List**
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the **Elementary Antiderivative List**, enter in any antiderivative.
- For **Integration by Substitution**, enter in the equation for \( u = \) formula with \( x \).
- For **Integration by Parts**, enter in the equations for \( u \) and \( dv \) separated by commas such as \( 'u = \text{formula}, \ dv = \text{formula}' \).
- For **Trigonometric Substitution**, enter in the substitution as \( 'x = a \sin(\theta)' \) or \( 'x = a \tan(\theta)' \), where \( a \) is a constant.
- For **Partial Fractions**, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).

---

Choose an appropriate method of integration for the following indefinite integral:

\[ \int \frac{(x + 1)}{x^2 - x - 6} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the **Elementary Antiderivative List**
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the **Elementary Antiderivative List**, enter in any antiderivative.
- For **Integration by Substitution**, enter in the equation for \( u = \) formula with \( x \).
- For **Integration by Parts**, enter in the equations for \( u \) and \( dv \) separated by commas such as \( 'u = \text{formula}, \ dv = \text{formula}' \).
- For **Trigonometric Substitution**, enter in the substitution as \( 'x = a \sin(\theta)' \) or \( 'x = a \tan(\theta)' \), where \( a \) is a constant.
- For **Partial Fractions**, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).
Choose an appropriate method of integration for the following indefinite integral:

\[ \int (3x + 2)\cos(x) \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the **Elementary Antiderivative List**
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the **Elementary Antiderivative List**, enter in any antiderivative.
- For **Integration by Substitution**, enter in the equation for \( u \) as \( u = \text{formula with } x \).
- For **Integration by Parts**, enter in the equations for \( u \) and \( dv \) separated by commas such as \( u = \text{formula}, \ dv = \text{formula} \).
- For **Trigonometric Substitution**, enter in the substitution as \( x = a \sin(\theta) \) or \( x = a \tan(\theta) \), where \( a \) is a constant.
- For **Partial Fractions**, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).

---

Choose an appropriate method of integration for the following indefinite integral:

\[ \int \frac{1}{x^4\sqrt{25 - x^2}} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the **Elementary Antiderivative List**
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method

- For an antiderivative on the **Elementary Antiderivative List**, enter in any antiderivative.
- For **Integration by Substitution**, enter in the equation for \( u \) as \( u = \text{formula with } x \).
- For **Integration by Parts**, enter in the equations for \( u \) and \( dv \) separated by commas such as \( u = \text{formula}, \ dv = \text{formula} \).
- For **Trigonometric Substitution**, enter in the substitution as \( x = a \sin(\theta) \) or \( x = a \tan(\theta) \), where \( a \) is a constant.
- For **Partial Fractions**, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).
Choose an appropriate method of integration for the following indefinite integral:

\[ \int x^3 \ln(x) \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the Elementary Antiderivative List
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method:
- For an antiderivative on the Elementary Antiderivative List, enter in any antiderivative.
- For Integration by Substitution, enter in the equation for \( u = \) formula with \( x \).
- For Integration by Parts, enter in the equations for \( u \) and \( dv \) separated by commas such as \( 'u = \) formula, \( dv = \) formula'\.
- For Trigonometric Substitution, enter in the substitution as \( 'x = a \sin(\theta)' \) or \( 'x = a \tan(\theta)' \), where \( a \) is a constant.
- For Partial Fractions, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).

---

Choose an appropriate method of integration for the following indefinite integral:

\[ \int xe^{-x^2} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the Elementary Antiderivative List
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method:
- For an antiderivative on the Elementary Antiderivative List, enter in any antiderivative.
- For Integration by Substitution, enter in the equation for \( u = \) formula with \( x \).
- For Integration by Parts, enter in the equations for \( u \) and \( dv \) separated by commas such as \( 'u = \) formula, \( dv = \) formula'\.
- For Trigonometric Substitution, enter in the substitution as \( 'x = a \sin(\theta)' \) or \( 'x = a \tan(\theta)' \), where \( a \) is a constant.
- For Partial Fractions, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).
Choose an appropriate method of integration for the following indefinite integral:

\[ \int 3\cos(4x + 1) \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the **Elementary Antiderivative List**
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method:

- For an antiderivative on the **Elementary Antiderivative List**, enter in any antiderivative.
- For **Integration by Substitution**, enter in the equation for \( u \) as '\( u = \text{formula with } x \)'.
- For **Integration by Parts**, enter in the equations for \( u \) and \( dv \) separated by commas such as '\( u = \text{formula}, \, dv = \text{formula} \)'.
- For **Trigonometric Substitution**, enter in the substitution as '\( x = a\sin(\theta) \) or \( x = a\tan(\theta) \)', where \( a \) is a constant.
- For **Partial Fractions**, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).

---

Choose an appropriate method of integration for the following indefinite integral:

\[ \int 5e^{-x/3} \, dx \]

**Penalty Scored!** You only get 3 attempts and receive half credit for using more than 2.

- On the **Elementary Antiderivative List**
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Partial Fractions

In the answer box below, enter in the following information for the chosen method:

- For an antiderivative on the **Elementary Antiderivative List**, enter in any antiderivative.
- For **Integration by Substitution**, enter in the equation for \( u \) as '\( u = \text{formula with } x \)'.
- For **Trigonometric Substitution**, enter in the substitution as '\( x = a\sin(\theta) \) or \( x = a\tan(\theta) \)', where \( a \) is a constant.
- For **Trigonometric Substitution**, enter in the substitution as '\( x = a\sin(u) \) or \( x = a\tan(u) \)', where \( a \) is a constant.
- For **Partial Fractions**, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).
Consider the following integral
\[ \int (3x - 7)^5 \, dx \]

a. Which of the following methods of integration is the best for this situation?
- This is on the Elementary Antiderivative list.
- Integration by Substitution
- Integration by Parts
- Trigonometric Substitution
- Integration by Partial Fractions

b. In the answer box below, enter in the following information for the chosen method
- For an antiderivative on the Elementary Antiderivative List, enter in any antiderivative.
- For Integration by Substitution, enter in the equation for \( u = \text{formula with } x \).
- For Integration by Parts, enter in the equations for \( u \) and \( dv \) separated by commas such as \( u = \text{formula}, dv = \text{formula} \).
- For Trigonometric Substitution, enter in the substitution as \( x = a \sin(\theta) \) or \( x = a \tan(\theta) \), where \( a \) is a constant.
- For Partial Fractions, enter in the partial fractions form using unknown constants chosen from \( A, B, C, D \) or \( F \).

\[
\int (3x - 7)^5 \, dx = \]