

1. Consider the rectangle determined by the points $A(-4, -2)$, $B(3, -2)$, $C(-4, 4)$ and D .

- Find the coordinates of D .
- Compute the area of the rectangle.

2. Simplify each of the following expressions.

$$\text{a) } \frac{(-2)^2 + (-2)^3 + (-2)^4}{|3 - (-3)^2|}$$

$$\text{f) } (-2)^{-4}$$

$$\text{k) } \frac{2^{-2}5^{-2}}{2^{-1}5^{-1}}$$

$$\text{b) } \frac{a(-2b^2a)^3 a^4 b^5}{a^2 b^3 (-2b^2 a^3)^2}$$

$$\text{g) } \left(\frac{2}{3}\right)^{-2}$$

$$\text{l) } \frac{a^2 b^{-3}}{c^4 d^{-5}}$$

$$\text{c) } ||-2^2 - 1| - 3| - (-2)^3 \div 2$$

$$\text{h) } 5^0$$

$$\text{i) } 2^{-2} + (-3)^{-1}$$

$$\text{m) } a^5 a^{-2}$$

$$\text{d) } 3^{-2}$$

$$\text{j) } \frac{2^{-2} - 5^{-2}}{2^{-1} + 5^{-1}}$$

$$\text{n) } (b^3)^{-4}$$

$$\text{e) } -2^{-4}$$

3. Completely factor each of the following expressions.

$$\text{a) } 50a^3 b x^2 - 18a^3 b$$

$$\text{b) } 80m^3 + 5m^5$$

$$\text{c) } 6a^2 k^5 - 6a^2 k$$

4. Solve each of the following equations. Make sure to check your solutions.

$$\text{a) } 4(2x - 3) - 3(3x - 5) = x + 9$$

$$\text{c) } 28x^2 = 4x^3$$

$$\text{b) } \frac{1}{3}x - 1\frac{2}{5} = -\frac{1}{2}$$

$$\text{d) } x - (4 - x)(x + 1) = (x + 5)(x - 3) + 27$$

$$\text{e) } (x - 5)^2 = (x + 1)^2$$

5. Solve the formula $ax + by = C$ for y .

6. Graph the lines defined by the equation $y = \frac{1}{2}x - 2$ and $y = -x + 4$ in the same coordinate system.

- Use your graphs to find the coordinates of the point where the two lines intersect each other.
- Use algebraic methods to check your answer for part a).

7. The sum of three consecutive odd numbers is 219. Find these numbers.

8. One side of a rectangle is 7 cm shorter than three times the other side. Find the sides if the perimeter of the rectangle is 170 cm.

9. Children's tickets cost \$8 each, adults' tickets cost \$15 each. A school purchased some tickets. The number of children's tickets bought is one less than three times the number of adult tickets bought. How many children's ticket did the school purchase if it paid a total of \$265 for the tickets?