

$$1. \begin{array}{l} x_1, y_1 \quad x_2, y_2 \\ (2, -4) \quad (-4, -4) \\ \frac{-4 + 4}{-4 - 2} \\ = \frac{0}{-6} \\ = 0 \end{array}$$

$$2. \begin{array}{l} 18x - 3y = -162 \\ -3y = -18x - 162 \\ \frac{-3y}{-3} = \frac{-18x}{-3} - \frac{162}{-3} \\ y = 6x + 54 \\ m = 6 \quad b = 54 \end{array}$$

$$3. \begin{array}{l} x_1, y_1 \quad x_2, y_2 \\ (-5, 3) \quad (-2, -2) \end{array}$$

$$m = \frac{-2 - 3}{-2 - 5}$$

$$m = \frac{-5}{-7}$$

$$5. \quad 4(x-3) + 2y = 8x + 2$$

$$(4x - 12) + 2y = 8x + 2$$

$$2y = 8x - 4x + 2 + 12$$

$$2y = \frac{4x + 14}{2 \quad 2}$$

$$y = 2x + 7$$

5. $4(x-3) + 2y = 8x + 2.$
 $(4x - 12) + 2y = 8x + 2.$
 $2y = 8x - 4x + 2 + 12.$
 $2y = \frac{4x + 14}{2}$
 $y = 2x + 7$

6. $-8x - 6y = 3.$
 $-6y = \frac{8x + 3}{-6}$
 $y = \frac{8x}{-6 \div 2} - \frac{1}{2}.$
 $y = \frac{-4x}{3} - \frac{1}{2}.$

7. $(5x + \dots)$

7. $(5x+2y)^2 = 2$
 $\frac{\partial y}{\partial x} = \frac{-5x+2}{2}$
 $y = \left(\frac{-5}{2}\right)x + 1$
 $\left(\frac{+2}{5}\right)$
~~D~~

8. $32x^4y^2 - 16x^3y^3 + 48x^5y^3$
 $= 16x^3y^2(2x^3 - y + 3x^2y)$ ~~H~~

9. $4x^2 + 5x - 6$ ~~B~~

10. $144x^2 - 25$
 $(12x)^2 - (5)^2$
 $(12x + 5)(12x - 5)$ ~~D~~

11. $4x^2 + 5x - 6$ $8x - 3 = -24$
 $8 + -3 = 5$

$4x^2 + 8x - 3x - 6$ ~~B~~
 $4x(x + 2) - 3(x + 2)$
 $(4x - 3)(x + 2)$

11. $4x^2 + 5x - 6$ $\frac{0 \times 2}{8} + \frac{0 \times 1}{-3} = 5$

$4x^2 + 8x - 3x - 6$ (C)

$4x(x+2) - 3(x+2)$

$(4x-3)(x+2)$

12. $14a^2b^5c^3 - 21ab^3c^2 + 35ac^5$

$7ac^2(2ab^5c - 3b^3 + 5c^3)$ (C)

13. $x^2 + 4x - 45$

$(x+9)(x-5)$ (D)

$\frac{-5}{-5} \times \frac{9}{9} = -45$ diff

$\frac{-5}{-5} + \frac{9}{9} = +4$ Bigger

-1×45

-3×15

-5×9

14.
$$\frac{2(2x-3y)(3x-y)}{(4x-6y)(3x-y)}$$

$$12x^2 - 4xy - 18xy + 6y^2$$

$$12x^2 - 22xy + 6y^2$$
C

15.
$$3(x^2 - 2x - 1) + 3(5x - 4 - 2x^2)$$

$$3x^2 - 6x - 3 + 15x - 12 - 6x^2$$

$$= -3x^2 + 9x - 15$$
C

16.
$$\begin{array}{l} \text{Aliant} \\ y = 0.02x + 26 \\ = 0.02(500) + 26 \\ = \$36 \end{array}$$

$$\begin{array}{l} \text{Rogers} \\ y = \$40 \end{array}$$
A

$v = 0.02x + 26$
 $= \$36$

17. $0.02x + 26 = 40 - 26$
 $\frac{0.02x}{0.02} = \frac{14}{0.02}$ (b)
 $x = 700$

18. $y = 0.02x + 26$ (c)

19. $(1, 6)$ (c)

20. Slope: $\frac{2}{3}$
 Point: $(-2, 5)$

~~Point: $(-2, 5)$~~

$m = \frac{y_2 - y_1}{x_2 - x_1}$
 $\frac{2}{3} = \frac{4 - 5}{x + 2}$
 $2(x + 2) = 3(4 - 5)$
 $2x + 4 = 3(4 - 5)$
 $2x + 4 = 3(4 - 5)$
 $2x + 4 = 12 - 15$
 $2x + 4 = -3$
 $2x = -7$
 $x = -\frac{7}{2}$

A

$y - y_1 = m(x - x_1)$
 $y - 5 = \frac{2}{3}(x + 2)$
 $3y - 15 = 2(x + 2)$

21. Slope: $\frac{1}{3}$
 Point: $(-6, -7)$

$3y - 15 = 2x + 4$
 $0 = 2x - 3y + 4 + 15$
 $0 = 2x - 3y + 19$

$x = -6$
 $x + 6 = 0$

D

22. $\frac{1}{3} = \frac{k+1}{6+2}$

x_1, y_1
 $(-2, -1)$ x_2, y_2
 $(6, k)$

21. Slope: 0 x y.
 Point: $(-6, -7)$
 (x, y)
 $X = -6$
 $X + 6 = 0$ **(D)**

$m = \frac{y_2 - y_1}{x_2 - x_1}$

22. $\frac{1}{3} = \frac{k+1}{6+2}$
 $\frac{1}{3} = \frac{k+1}{8}$
 $3(k+1) = 8$
 $3k+3 = 8-3$ **(A)**
 $\frac{3k}{3} = \frac{5}{3}$
 $k = \frac{5}{3}$

23. $m = \frac{2}{4} = \frac{1}{2}$
 $b = -2$
 $y = mx + b$
 $y = \frac{1}{2}x - 2$ **(B)**

24. $\sqrt[5]{64}$
 $\sqrt[5]{2 \times 2 \times 2 \times 2 \times 2 \times 2}$
 $= 2^5 \sqrt{2}$ **(B)**

25. $\sqrt[3]{54}$
 $\sqrt[3]{2 \times 3 \times 3 \times 3}$ **(D)**
 $= 3^3 \sqrt{2}$ **(D)**

26. $\left(\frac{1}{27}\right)^{-2/3}$

$27^{2/3}$ (with handwritten notes: "exp" pointing to the 2 and "root" pointing to the 3)

$(\sqrt[3]{27})^2$
 $(3)^2$
 $= 9$

D

27. $(\sqrt[4]{13})^7$

$13^{\frac{exp}{root}} = 13^{7/4}$

$13^{7/4}$

D

28.

$\frac{(x^3 - 4)^{-2}}{(x^2 y^3)^3}$

29.

380

$2 \times 2 \times 5 \times 19$

28. $\frac{(x^3 y^{-4})^{-2}}{(x^2 y^3)^3}$

$\frac{x^{-6} y^8}{x^6 y^9}$ **A**

$= x^3 y^{-1}$

$= \frac{x^3}{y}$ **A**

29. 380

$2 \times 2 \times 5 \times 19$

$(2^2)(5)(19)$

$= 380$

A **A**

30. **E** **E**

31. **D** **C**

32. **A** **A**

33. $9x + 5y = 15$ (1)

$4x + 10y = 30$ (2)

$\textcircled{1} \times 2$ $-18x - 10y = -30$ (3)

$4x + 10y = 30$ (2)

$\textcircled{3} + \textcircled{2}$

$\frac{-14x}{-14x} = \frac{0}{-14}$ $x = 0$ (0, 3)

34. $x - 3y = 1$ ~~1~~ $\textcircled{2}$

$2x + 4y = -18$ $\textcircled{2}$

rearrange

$x - 3y = 1 + 3y$

$x = 1 + 3y$

Sub in $\textcircled{2}$

$2(1 + 3y) + 4y = -18$

$2 + 6y + 4y = -18 - 2$

$\frac{10y}{10} = \frac{-20}{10}$

$y = -2$

$x = 1 + 3y$

$x = 1 + 3(-2)$

$x = 1 - 6$

$x = -5$

$(-5, -2)$ $\textcircled{4}$

$$35. \quad \begin{array}{r} 6H + 12G = 198 \quad \textcircled{1} \\ 12H + 6G = 198 \quad \textcircled{2} \end{array}$$

$$\begin{array}{r} \textcircled{1} \times 2. \quad -12H - 24G = -396 \quad \textcircled{3} \\ 12H + 6G = 198 \quad \textcircled{2} \end{array}$$

$$\begin{array}{r} \textcircled{3} - \textcircled{2} \\ \hline -18G = -198 \\ -18 \quad \quad -18 \end{array}$$

$$G = 11$$

Let H = Hostas

$$G = \$11$$

G = Geraniums \textcircled{C} C

$$6H + 12(11) = 198$$

$$6H + 132 = 198$$

$$\frac{6H}{6} = \frac{66}{6}$$

$$H = \$11$$

36. (A)

$$\begin{array}{l}
 37. \quad d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\
 \quad \quad d = \sqrt{(8 - 2)^2 + (-2 - 6)^2} \\
 \quad \quad d = \sqrt{(6)^2 + (-8)^2} \\
 \quad \quad d = \sqrt{36 + 64} \\
 \quad \quad d = 10 \quad (A)
 \end{array}$$

$\begin{array}{l} x_1, y_1 \\ (2, 6) \end{array} \quad \begin{array}{l} x_2, y_2 \\ (8, -2) \end{array}$

38. (10, 3) (4, 7)

$$\begin{array}{l}
 \left(\frac{14}{2}, \frac{10}{2}\right) \\
 (7, 5) \quad (B)
 \end{array}$$



