

Ch.7 Review p.421 #7,10,14,17,21,22,24,28

⑦. Is $(2,5)$ a solution of the system? Explain.

$$\begin{cases} y = 2x + 1 \\ 2x - y = 8 \end{cases}$$

Plug it in!

$$5 = 2(2) + 1 \quad 2(2) - (5) = 8$$

$$5 = 4 + 1 \quad 4 - 5 = 8$$

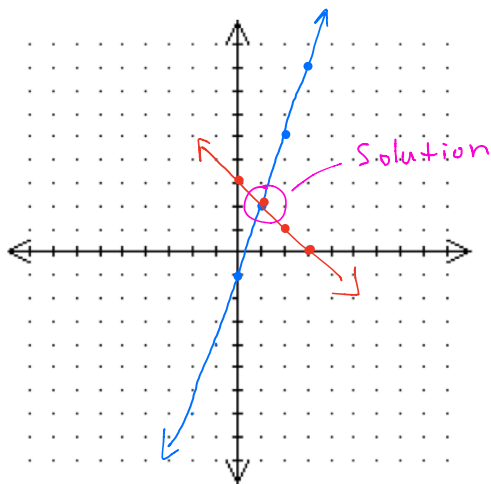
$$5 = 5 \quad \checkmark \quad \text{TRUE} \quad -1 \neq 8 \quad \text{FALSE}$$

No, $(2,5)$ is not a solution, because after substituting $(2,5)$ for both equations, it does not make a true statement in the second equation.

⑩. $y = 3x - 1$ ← move "slope"
 $y = -x + 3$ ← begin "y-int."
 $(1, 2)$

Check:

$$\begin{array}{l} 2 = 3(1) - 1 \\ 2 = 3 - 1 \\ 2 = 2 \quad \checkmark \end{array} \quad \begin{array}{l} 2 = -(1) + 3 \\ 2 = -1 + 3 \\ 2 = 2 \quad \checkmark \end{array}$$



⑭. $y = 3x + 11$
 $y = -2x + 1$

$$\begin{array}{l} -2x + 1 = 3x + 11 \\ +2x \quad +2x \end{array}$$

$$\begin{array}{l} -11 = 5x + 11 \\ -11 \quad -11 \end{array}$$

$$\begin{array}{l} -10 = 5x \\ 5 \quad 5 \end{array}$$

$$\begin{array}{l} -2 = x \end{array}$$

$$y = 3(-2) + 11$$

$$y = -6 + 11$$

$$y = 5$$

Solution:

$$(-2, 5)$$

$$\textcircled{17.} \quad y = 5x - 8$$

$$5y = 2x + 6$$

$$5(5x - 8) = 2x + 6$$

$$\frac{25x - 40}{-2x} = \frac{2x + 6}{-2x}$$

$$23x - 40 = 2x + 6$$

$$\frac{23x}{23} = \frac{46}{23}$$

$$\textcircled{x = 2}$$

$$y = 5(2) - 8$$

$$y = 10 - 8$$

$$\textcircled{y = 2}$$

Solution:

$$(2, 2)$$

$$\textcircled{21.} \quad 2x - 3y = 5 \rightarrow \boxed{2x - 3y = 5}$$

$$x + 2y = -1 \rightarrow \boxed{-2x - 4y = 2}$$

$$\begin{matrix} -2 & -2 & -2 \end{matrix}$$

$$\frac{-7y = 7}{-7} = \frac{7}{-7}$$

$$\textcircled{y = -1}$$

$$x + 2(-1) = -1$$

$$\frac{x - 2}{+2} = \frac{-1}{+2}$$

$$\textcircled{x = 1}$$

Solution:

$$(1, -1)$$

$$\textcircled{22.} \quad \boxed{x + y = 10}$$

$$+ \quad \boxed{x - y = 2}$$

$$\frac{2x}{2} = \frac{12}{2}$$

$$\textcircled{x = 6}$$

Solution:

$$(6, 4)$$

$$\frac{(6) + y}{-6} = \frac{10}{-6}$$

$$\textcircled{y = 4}$$

24. $x = \text{chickens}$

$$\begin{cases} x + y = 34 & \text{\# of Animals} \\ 2x + 4y = 110 & \text{Legs} \end{cases}$$

$$-2x - 2y = -68$$

$$\begin{array}{r} 2x + 4y = 110 \\ -2x - 2y = -68 \\ \hline \end{array} \quad \begin{array}{l} x + y = 34 \\ x + y = 34 \end{array}$$

$$2y = 42$$

$$x + 21 = 34$$

$$y = 21 \text{ cows}$$

$$x = 13 \text{ chickens}$$

$$\begin{array}{r} 28. \quad \begin{array}{r} 3B + 4F = 14.63 \\ 2B + 5F = 16.03 \end{array} \quad \begin{array}{l} \rightarrow \\ \rightarrow \end{array} \quad \begin{array}{r} -6B - 8F = -29.26 \\ 6B + 15F = 48.09 \end{array} \end{array}$$

$$\begin{array}{r} 7F = 18.83 \\ \hline 7 \quad 7 \end{array}$$

$$2B + 5F = 16.03$$

$$2B + 5(2.69) = 16.03$$

$$\begin{array}{r} 2B + 13.45 = 16.03 \\ -13.45 \quad -13.45 \\ \hline \end{array}$$

$$\begin{array}{r} 2B \quad = 2.58 \\ \hline 2 \quad 2 \end{array}$$

$B = \$1.29$ per package of balloons



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#11-19, 26, 33-38, 41-45, 50, 59, 60, 63-66, 71

$$11. \frac{b^{-4} c^0 d^6}{1} = \frac{d^6}{b^4} \text{ or } \boxed{\frac{d^6}{b^4}}$$

$$12. \frac{x^{-2}}{y^{-8}} = \boxed{\frac{y^8}{x^2}}$$

$$13. \frac{7k^{-8}h^3}{1} = \boxed{\frac{7h^3}{k^8}}$$

$$14. \frac{1}{p^2 q^{-4} r^0} = \frac{q^4}{p^2 \cdot 1} \text{ or } \boxed{\frac{q^4}{p^2}}$$

$$15. \left(\frac{2}{5}\right)^{-4} = \frac{2^{-4}}{5^{-4}} = \frac{5^4}{2^4} = \boxed{\frac{625}{16}}$$

$$16. \frac{(-2)^{-3}}{1} = \frac{1}{(-2)^3} = \boxed{\frac{1}{-8}} \text{ or } \boxed{-\frac{1}{8}}$$

$$17. \frac{-2^{-3}}{1} = \frac{-1}{2^3} = \boxed{\frac{-1}{8}} \text{ or } \boxed{-\frac{1}{8}}$$

$$18. \frac{7^{-2} y^{-4}}{1} = \frac{1}{7^2 y^4} = \boxed{\frac{1}{49 y^4}}$$

$$19. \frac{9^1 w^{-4}}{x^{-2} y^7} = \boxed{\frac{9x^2}{y^7 w^4}}$$

$$26. (-3b)^4 \neq -12b^4$$

because $(-3b)^4$ means $(-3)^4 (b)^4$. Both factors have the exponent of 4 ... like the distributive prop. $\boxed{81b^4}$

$$33. \quad 2 \cdot d^{-2} \cdot d^3 = 2d^5$$

$$34. \quad (9r^3)^4 = 9^{12} r^{12}$$

$$35. \quad (5c^{-4})(-4m^2c^8) = -20 \cdot c^{-4} \cdot m^2 \cdot c^8 = -20c^4m^2$$

$$36. \quad (1.34)^2 (1.34)^{-8} = (1.34)^{10} (1.34)^{-8} = (1.34)^2$$

$$37. \quad (12x^2y^{-2})^5 (4xy^{-3})^{-8} = 12^5 x^{10} y^{-10} \cdot 4^{-8} x^{-8} y^{24}$$

$$= \frac{12^5 \cdot 4^{-8} \cdot x^2 \cdot y^{14}}{4^8}$$

$$38. \quad (-2r^{-4})^2 (-3r^2z^8)^{-1} = (-2)^2 r^{-8} \cdot (-3)^{-1} r^{-2} z^{-8}$$

$$= \frac{(-2)^2 (-3)^{-1} r^{-10} z^{-8}}{(-3)^1 r^{10} z^8} = \frac{4}{3r^{10}z^8}$$

$$41. \quad \frac{w^2}{w^5} = \frac{\cancel{w} \cdot \cancel{w}}{\cancel{w} \cdot \cancel{w} \cdot \cancel{w} \cdot \cancel{w} \cdot w} = \frac{1}{w^3} \quad \text{OR} \quad w^{2-5} = w^{-3} = \frac{1}{w^3}$$

$$42. \quad (8^3) \cdot 8^{-5} = 8^3 \cdot 8^{-5} = 8^{-2} = \frac{1}{8^2} = \frac{1}{64}$$

Simplify Fraction

$$43. \quad \frac{2x^3}{3x^1} = \frac{7x^2}{1}$$

Subtract Exponents

$$44. \quad \left(\frac{n^5}{v^3}\right)^7 = \frac{n^{35}}{v^{21}}$$

$$45. \quad \frac{e^{-6}c^3}{e^5} = \frac{c^3}{e^6 \cdot e^5} = \frac{c^3}{e^{11}}$$

$$50. \quad \left(\frac{5a^8}{10a^6}\right)^{-3}$$

Step 1: Simplify $\frac{5}{10} \rightarrow \frac{1}{2}$

Step 2: Simplify $\frac{a^8}{a^6} \rightarrow \frac{a^2}{1}$ so... $\left(\frac{a^2}{2}\right)^{-3}$

Step 3: Both numerator and denominator raise

to the power of -3 . $\frac{a^{-6}}{2^{-3}}$

Step 4: Move the numbers w/ negative exponents to the other side of the fraction to become positive exponents. $\frac{2^3}{a^6}$

Step 5: Simplify $2^3 = 8$

Answer: $\frac{8}{a^6}$

59. a.) $f(t) = 30(3)^4$ 2 hours is 4 30-min. cycles.

2,430 bacteria

b.) $30(3)^5 = 7,290$

$30(3)^6 = 21,870 \rightarrow 6 \cdot 30 \text{ min} = 180 \text{ min.}$

60. $a = \text{initial amount} = 100$

$b = \text{growth factor} = 1.025$

63. $y = 5.2(3)^x$

↓ Growth, $3 > 1$.

Growth Factor of 3.

64. $y = 0.15\left(\frac{3}{2}\right)^x$

↓ Growth, $\frac{3}{2} > 1$.

Growth Factor of $\frac{3}{2}$.

65. $y = 7(0.32)^x$

↓ Decay, $0.32 < 1$

Decay Factor 0.32

66. $y = 1.3 \left(\frac{1}{4}\right)^x$

Decay, $\frac{1}{4} < 1$

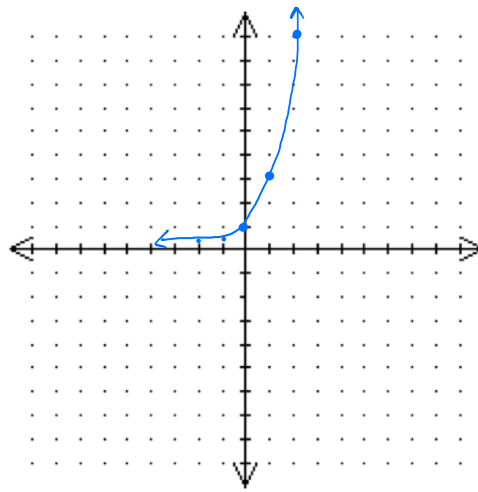
Decay Factor of $\frac{1}{4}$

71. $y = 25(0.80)^x$ ← 5

$y = 8.192 \text{ mg}$

Graph: $y = (3)^x$

x	y	
-2	$\frac{1}{9}$	$3^{-2} = \frac{1}{3^2}$
-1	$\frac{1}{3}$	$3^{-1} = \frac{1}{3^1}$
→ 0	1	3^0
1	3	3^1
2	9	3^2



Graph: $y = \left(\frac{1}{5}\right)^x$

x	y	
-2	25	$\left(\frac{1}{5}\right)^{-2} = \frac{1^{-2}}{5^{-2}} = \frac{5^2}{1^2} = 25$
-1	5	$\left(\frac{1}{5}\right)^{-1} = \frac{1^{-1}}{5^{-1}} = \frac{5^1}{1^1} = 5$
→ 0	1	$\left(\frac{1}{5}\right)^0$
1	$\frac{1}{5}$	$\left(\frac{1}{5}\right)^1 = \frac{1^1}{5^1} = \frac{1}{5}$
2	$\frac{1}{25}$	$\left(\frac{1}{5}\right)^2 = \frac{1^2}{5^2} = \frac{1}{25}$

