

Review
Simplify.

$$\left(\frac{x^5 y^{-3} z^2}{x^{-2} y^3 z} \right)^{-2}$$

$$= \left(\frac{x^7 z}{y^6} \right)^{-2}$$

$$= \frac{x^{-14} z^{-2}}{y^{-12}}$$

$$= \frac{y^{12}}{x^{14} z^2}$$

5.6

63. $x^2 y^2 - 8xy + 15$

$$x^2 y^2 - 5xy - 3xy + 15$$

$$xy(xy - 5) - 3(xy - 5)$$

$$(xy - 5)(xy - 3)$$

$$\begin{aligned}
 129. \quad & a^{2n+2} - 6a^{n+2} + 9a^2 \\
 & \quad \quad \quad (a^n)^2 - 2(a^n)(3) + 3^2 \\
 & a^2 (a^{2n} - 6a^n + 9) \\
 & a^2 (a^n - 3)^2
 \end{aligned}$$

$$\begin{aligned}
 59. \quad & x^{6n} + y^{3n} \\
 & (x^{2n})^3 + (y^n)^3 \\
 & (x^{2n} + y^n)(x^{4n} - x^{2n}y^n + y^{2n})
 \end{aligned}$$

$$36. \quad 4a^2 - 36ab + 81b^2$$

$$(2a)^2 - 2(2a)(9b) + (9b)^2$$

$$(2a - 9b)^2$$

$$4(81)$$

$$2 \cdot 2 \cdot 9 \cdot 9$$

5.7 Solving Equations by Factoring

Zero Product Property:

If $AB = 0$, then $A = 0$ or $B = 0$.

$$(x+2)(x-5)(3x+4) = 0$$

Set each factor = 0 & solve for x

$$x+2=0$$

$$x = -2$$

$$x-5=0$$

$$x = 5$$

$$3x+4=0$$

$$3x = -4$$

$$x = -\frac{4}{3}$$

$$(x-3)(x+4)(x-2) = 5$$

~~$$x-3=5 \quad x+4=5 \quad x-2=5$$~~

5.7

14. $x^2+x-6=0$

$$(x+3)(x-2)=0$$

$$x+3=0 \quad x-2=0$$

$$x=-3 \quad x=2$$

$$20. \quad 2y^2 - 10y = 0$$

$$2y(y - 5) = 0$$

$$2y = 0$$

$$y - 5 = 0$$

$$y = 0 \quad y = 5$$

$$26. \quad 4y^2 - 19y = 5$$

$$4y^2 - 19y - 5 = 0$$

$$4y^2 - 20y + y - 5 = 0$$

$$4y(y - 5) + 1(y - 5) = 0$$

$$(y - 5)(4y + 1) = 0$$

$$y - 5 = 0$$

$$4y + 1 = 0$$

$$y = 5$$

$$4y = -1$$

$$y = -\frac{1}{4}$$

$$40. (x+2)(x-6) = 20$$

$$(x+2)(x-6) - 20 = 0$$

$$x^2 - 6x + 2x - 12 - 20 = 0$$

$$x^2 - 4x - 32 = 0$$

$$(x-8)(x+4) = 0$$

$$x-8=0 \quad x+4=0$$

$$x=8 \quad x=-4$$

$$48. \underline{2x^3 + x^2} - \underline{8x - 4} = 0$$

$$x^2(2x+1) - 4(2x+1) = 0$$

$$(2x+1)(x^2-4) = 0$$

$$(2x+1)(x-2)(x+2) = 0$$

$$2x+1=0 \quad x-2=0 \quad x+2=0$$

$$2x = -1 \quad x = 2 \quad x = -2$$

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

32. $t(t+1) = 42$

$t^2 + t = 42$

$t^2 + t - 42 = 0$

$(t-6)(t+7) = 0$

$t-6=0 \quad t+7=0$

$t=6 \quad t=-7$

42. $(a-9)(a-1) = -7$

$a^2 - a - 9a + 9 = -7$

$a^2 - 10a + 9 + 7 = 0$

$a^2 - 10a + 16 = 0$

$(a-8)(a-2) = 0$

$a-8=0 \quad a-2=0$

$a=8 \quad a=2$

46. $(2-b)^2 + b^2 = 10$

$4 - 4b + b^2 + b^2 = 10$

$2b^2 - 4b + 4 - 10 = 0$

$2b^2 - 4b - 6 = 0$

$2(b^2 - 2b - 3) = 0$

$2(b-3)(b+1) = 0$

$b-3=0 \quad b+1=0$

$b=3 \quad b=-1$

50. $12x^3 - 8x^2 - 3x + 2 = 0$

$4x^2(3x-2) - 1(3x-2) = 0$

$(3x-2)(4x^2-1) = 0$

$(3x-2)(2x-1)(2x+1) = 0$

$3x-2=0, 2x-1=0, 2x+1=0$

$3x=2, 2x=1, 2x=-1$

$x = \frac{2}{3}, \frac{1}{2}, -\frac{1}{2}$

52. $f(x) = x^2 + 4x - 2$; $f(c) = 3$

Find all values of c for which $f(c) = 3$.

$f(c) = c^2 + 4c - 2$

$3 = c^2 + 4c - 2$

$0 = c^2 + 4c - 5$

$0 = (c+5)(c-1)$

$c+5=0 \quad c-1=0$

$c = -5, 1$

$$58. f(x) = x^3 + 3x^2 - 4x - 11 \quad ; f(c) = 1$$

$$x^3 + 3x^2 - 4x - 11 = 1$$

$$\underbrace{x^3 + 3x^2 - 4x - 12}_{=0} = 0$$

$$x^2(x+3) - 4(x+3) = 0$$

$$(x+3)(x^2 - 4) = 0$$

$$(x+3)(x-2)(x+2) = 0$$

$$x+3=0, x-2=0, x+2=0$$

$$x = -3, 2, -2$$

$$64. x^3 + 7x = 8x^2$$

$$x^3 - 8x^2 + 7x = 0$$

$$x(x^2 - 8x + 7) = 0$$

$$x(x-7)(x-1) = 0$$

$$x=0, x-7=0, x-1=0$$

$$x=7, x=1$$

72. height of \triangle is ^{4cm more than} twice the length of the base. Area of \triangle is 35cm^2 . Find the height.

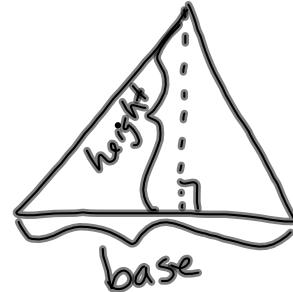
$$35 = \frac{1}{2} \cdot b \cdot (4 + 2b)$$

$$35 = 2b + b^2$$

$$b^2 + 2b - 35 = 0$$

$$(b+7)(b-5) = 0$$

~~$b = -7$~~ , $b = 5$



$$\text{Area} = \frac{1}{2} \text{base} \cdot \text{height}$$

$$h = 4 + 2(5) = \boxed{14 \text{ cm}}$$

5.7

35 - 49 odd

solve

51 - 57 odd

$f(c) = \sim$

61 - 75 odd

word prob's