10.1 p606

(1) $x^2 = 16$

$\sqrt{x^2} = \pm\sqrt{16}$

$x = \pm 4$

$\{\pm 4\}$

(3) $y^2 = 81$

$\sqrt{y^2} = \sqrt{81}$

$y = \pm 9$

$\{\pm 9\}$

(5) $x^2 = 7$

$\sqrt{x^2} = \pm\sqrt{7}$

$x = \pm\sqrt{7}$

$\{\pm\sqrt{7}\}$

(7) $x^2 = 50$

$\sqrt{x^2} = \pm\sqrt{50}$

$x = \pm\sqrt{25 \cdot 2}$

$= \pm 5\sqrt{2}$

$\{\pm 5\sqrt{2}\}$

(9) $5x^2 = 20$

$x^2 = 4$

$\sqrt{x^2} = \pm\sqrt{4}$

$x = \pm 2$

$\{\pm 2\}$

(11) $4y^2 = 49$

$y^2 = \frac{49}{4}$

$\sqrt{y^2} = \pm\sqrt{\frac{49}{4}}$

$y = \pm\frac{7}{2}$

$\{\pm\frac{7}{2}\}$

(13) $2x^2 + 1 = 51$

$2x^2 = 50$

$x^2 = 25$

$\sqrt{x^2} = \pm\sqrt{25}$

$x = \pm 5$

$\{\pm 5\}$

(15) $3x^2 - 2 = 0$

$3x^2 = 2$

$x^2 = \frac{2}{3}$

$\sqrt{x^2} = \pm\sqrt{\frac{2}{3}}$

$x = \pm\frac{\sqrt{2}}{\sqrt{3}}\left(\frac{\sqrt{3}}{\sqrt{3}}\right)$

$x = \pm\frac{\sqrt{6}}{3}$

$\{\pm\frac{\sqrt{6}}{3}\}$

(17) $5z^2 - 7 = 0$

$5z^2 = 7$

$z^2 = \frac{7}{5}$

$\sqrt{z^2} = \pm\sqrt{\frac{7}{5}}$

$z = \pm\frac{\sqrt{7}}{\sqrt{5}}\left(\frac{\sqrt{5}}{\sqrt{5}}\right)$

$z = \pm\frac{\sqrt{35}}{5}$

$\{\pm\frac{\sqrt{35}}{5}\}$

(19) $(x-3)^2 = 16$

$\sqrt{(x-3)^2} = \pm\sqrt{16}$

$x - 3 = \pm 4$

$+3 \quad +3$

$x = 3 \pm 4$

$x = 3 + 4$

or

$x = 3 - 4$

$x = 7$ or -1

$\{-1, 7\}$

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(21) $(x+5)^2 = 121$

$\sqrt{(x+5)^2} = \pm\sqrt{121}$

$x+5 = \pm 11$

$-5 \quad -5$

$x = -5 \pm 11$

$x = 6$ or $x = -16$

$\{-16, 6\}$

(23) $(3x+2)^2 = 9$

$\sqrt{(3x+2)^2} = \pm\sqrt{9}$

$3x+2 = \pm 3$

$-2 \quad -2$

$3x = -2 \pm 3$

$3x = -2+3$ or $3x = -2-3$

$x = \frac{1}{3}$ or $x = -\frac{5}{3}$

$\{-\frac{5}{3}, \frac{1}{3}\}$

(25) $(x-5)^2 = 3$

$\sqrt{(x-5)^2} = \pm\sqrt{3}$

$x-5 = \pm\sqrt{3}$

$x = 5 \pm \sqrt{3}$

$\{5 \pm \sqrt{3}\}$

(27) $(y+8)^2 = 11$

$\sqrt{(y+8)^2} = \pm\sqrt{11}$

$y+8 = \pm\sqrt{11}$

$y = -8 \pm \sqrt{11}$

$\{-8 \pm \sqrt{11}\}$

(29) $(z-4)^2 = 18$

$\sqrt{(z-4)^2} = \pm\sqrt{18}$

$z-4 = \pm 3\sqrt{2}$

$z = 4 \pm 3\sqrt{2}$

$\{4 \pm 3\sqrt{2}\}$

(31) $x^2+4x+4 = 16$

$(x+2)^2 = 16$

$\sqrt{(x+2)^2} = \pm\sqrt{16}$

$x+2 = \pm 4$

$x = -2 \pm 4$

$\{-6, 2\}$

(33) $x^2-6x+9 = 36$

$(x-3)^2 = 36$

$\sqrt{(x-3)^2} = \pm\sqrt{36}$

$x-3 = \pm 6$

$x = 3 \pm 6$

$\{-3, 9\}$

(35) $x^2-10x+25 = 2$

$(x-5)^2 = 2$

$\sqrt{(x-5)^2} = \pm\sqrt{2}$

$x-5 = \pm\sqrt{2}$

$x = 5 \pm \sqrt{2}$

$\{5 \pm \sqrt{2}\}$

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(37) $x^2 + 2x + 1 = 5$

$(x+1)^2 = 5$

$\sqrt{(x+1)^2} = \pm\sqrt{5}$

$x + 1 = \pm\sqrt{5}$

$x = -1 \pm \sqrt{5}$

$\boxed{\{-1 \pm \sqrt{5}\}}$

(39) $y^2 - 14y + 49 = 12$

$(y-7)^2 = 12$

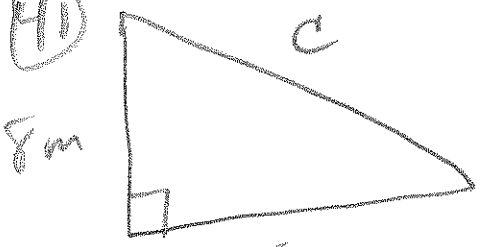
$\sqrt{(y-7)^2} = \pm\sqrt{12}$

$y - 7 = \pm 2\sqrt{3}$

$y = 7 \pm 2\sqrt{3}$

$\boxed{\{7 \pm 2\sqrt{3}\}}$

(41)



$a^2 + b^2 = c^2$

$8^2 + 15^2 = c^2$

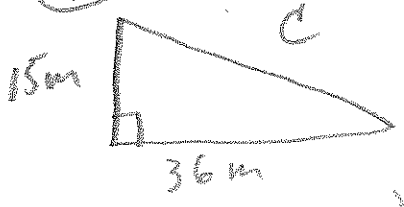
$64 + 225 = c^2$

$289 = c^2$

$\sqrt{289} = c$

$\boxed{c = 17 \text{ m}}$

(43)



$c^2 = a^2 + b^2$

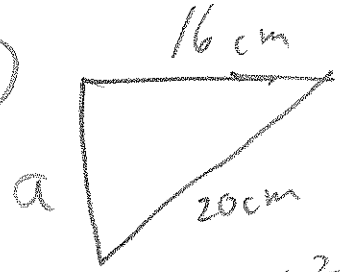
$c^2 = 15^2 + 36^2$

$c^2 = 225 + 1296$

$c = \sqrt{1521}$

$c = \boxed{39 \text{ m}}$

(45)



$c^2 = a^2 + b^2$

$20^2 = a^2 + 16^2$

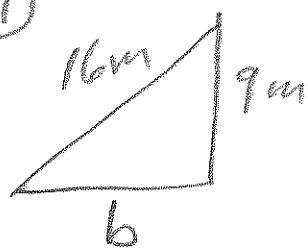
$400 - 256 = a^2$

$144 = a^2$

$a = \sqrt{144}$

$\boxed{a = 12 \text{ cm}}$

(47)



$a^2 + b^2 = c^2$

$9^2 + b^2 = 16^2$

$-9^2 \quad -9^2$

$b^2 = 16^2 - 9^2$

$b^2 = 256 - 81$

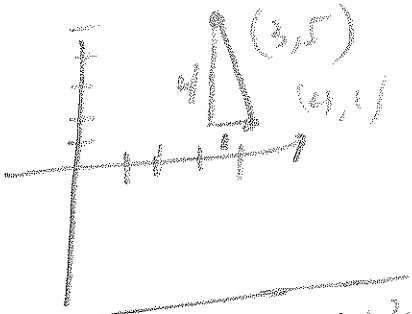
$b = \sqrt{175}$

$b = \sqrt{7 \cdot 25}$

$\boxed{b = 5\sqrt{7} \text{ m}}$

10.1 p606

(49) (x_1, y_1) $(3,5)$ and (x_2, y_2) $(4,1)$



$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

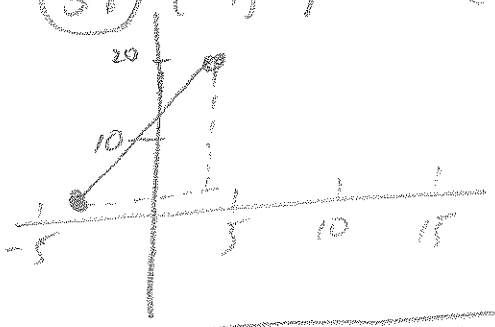
$= \sqrt{(4-3)^2 + (1-5)^2}$

$= \sqrt{1^2 + (-4)^2}$

$= \sqrt{17}$

≈ 4.12

(51) (x_1, y_1) $(-4,2)$ and (x_2, y_2) $(4,17)$



$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

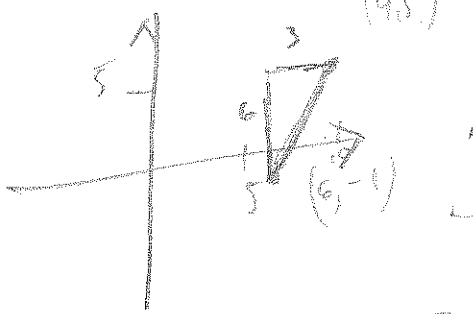
$= \sqrt{(4-(-4))^2 + (17-2)^2}$

$= \sqrt{8^2 + 15^2}$

$= \sqrt{289}$

$= 17$ units

(53) (x_1, y_1) $(6,-1)$ (x_2, y_2) $(9,5)$



$d = \sqrt{(x_2-x_1)^2 + (y_2-x_1)^2}$

$= \sqrt{(9-6)^2 + (5-(-1))}$

$= \sqrt{3^2 + 6^2}$

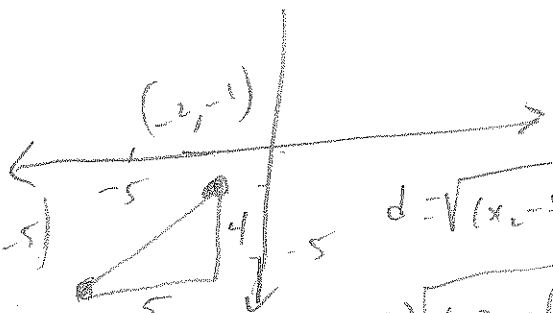
$= \sqrt{45}$

$= \sqrt{9 \cdot 5}$

$d = 3\sqrt{5}$

$d \approx 6.71$ units

(55) (x_1, y_1) $(-7,-5)$ (x_2, y_2) $(-2,-1)$



$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

$= \sqrt{(-2-(-7))^2 + (-1-(-5))^2}$

$= \sqrt{(5)^2 + (4)^2}$

$= \sqrt{25+16}$

$d = \sqrt{41}$

$d \approx 6.40$ units