

$$1. \quad 7x^2 - 6x - 3 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{6 \pm \sqrt{36 - 4(7)(-3)}}{2(7)}$$

$$= \frac{6 \pm \sqrt{120}}{14}$$

$$= \frac{6 \pm 2\sqrt{30}}{14}$$

$$= \frac{3 \pm \sqrt{30}}{7}$$

$$\begin{array}{r} 12 \\ \uparrow \\ 2 \overline{) 60} \\ \uparrow \\ 2 \overline{) 30} \\ \uparrow \\ 2 \overline{) 15} \\ \uparrow \\ 5 \end{array}$$

$$2. \quad |2x + 1| = 4$$

$$2x + 1 = 4$$

$$2x = 3$$

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

CHECK? ✓

$$\text{or } 2x + 1 = -4$$

$$2x = -5$$

$$x = -\frac{5}{2}$$

CHECK? ✓

$$3. \quad \frac{(a+b)(a+b)}{(a+b)(a-b)} + \frac{(a-b)(a-b)}{(a+b)(a-b)} =$$

$$\frac{(a+b)^2 + (a-b)^2}{(a+b)(a-b)}$$

$$\frac{(a+b) \quad a-b \quad \overline{a+b} \quad (a-b)}{\begin{matrix} (a) & \frac{a}{b} & + & \frac{b}{a} & \frac{(b)}{(b)} \\ (a) & b & & a & (b) \end{matrix}} = \frac{(a+b) + (a-b)}{\frac{(a+b)(a-b)}{a^2+b^2}}$$

$$= \frac{(a+b)^2 + (a-b)^2}{(a+b)(a-b)} \cdot \frac{ab}{a^2+b^2} = \frac{ab [a^2 + 2ab + b^2 + a^2 - 2ab - b^2]}{(a^2+b^2)(a+b)(a-b)}$$

$$= \frac{ab [2a^2]}{(a^2+b^2)(a+b)(a-b)} = \boxed{\frac{2a^3b}{(a^2+b^2)(a+b)(a-b)}}$$

4. $y - y_0 = m(x - x_0)$

$$y + 7 = -\frac{1}{2}(x - 1)$$

$$y + 7 = -\frac{1}{2}x + \frac{1}{2}$$

$$y = -\frac{1}{2}x + \frac{1}{2} - 7$$

$$y = -\frac{1}{2}x - \frac{13}{2}$$

5. $2x - y = -5$ $y = x^2 + 2$ USE SUBSTITUTION

$$2x - (x^2 + 2) = -5$$

$$2x - x^2 - 2 = -5$$

$$x^2 - 2x - 3 = 0$$

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

$$x = 3, -1$$

$$\text{wenn } x=3, y = (3)^2 + 2 = 11$$

$$x=-1, y = (-1)^2 + 2 = 3$$

$$\begin{pmatrix} 3, 11 \\ -1, 3 \end{pmatrix}$$

$$6. \quad x^2 - 6x + 8 < 0$$

$$(x-4)(x-2) < 0$$

$$x = 4, 2$$

$$\begin{array}{ccccccc} & + & & - & & + & \\ & | & & | & & & \\ \hline & 2 & & 4 & & & \end{array}$$

$$2 < x < 4$$

$$7. \quad 10^{2x-3} = \sqrt{10}$$

$$10^{2x-3} = 10^{\frac{1}{2}}$$

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

$$2x = \frac{7}{2}$$

$$x = \frac{7}{4}$$

$$8. \log_5 (x+9) = 2 \log_5 (x-3)$$

$$\log_5 (x+9) = \log_5 (x-3)^2$$

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

$$x+9 = x^2 - 6x + 9$$

$$x^2 - 7x = 0$$

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

$$x = 0, 7$$

↑
reject

$$\boxed{x = 7}$$

$$9. e^{x-3} = 2$$

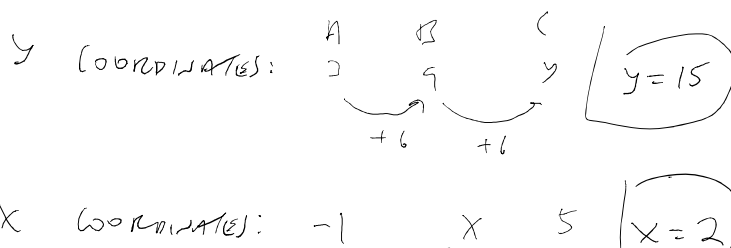
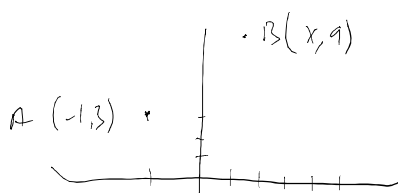
$$(x-3) \ln e = \ln 2$$

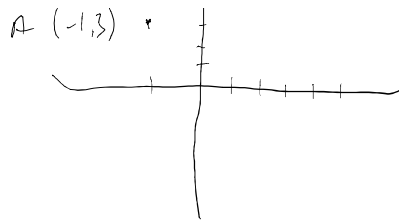
$$x-3 = \ln 2$$

$$\boxed{x = \ln 2 + 3}$$

(•(s,y))

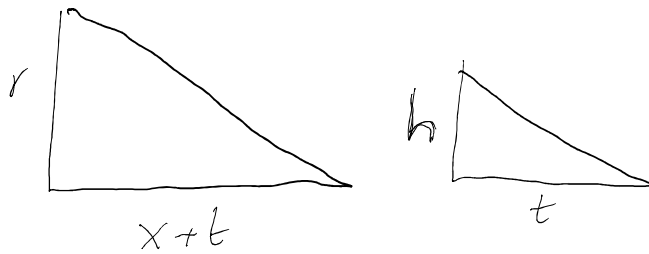
10.





X coordinate: $-1 \xrightarrow{+3} x \xrightarrow{+3} 5$ $x = 2$

11.

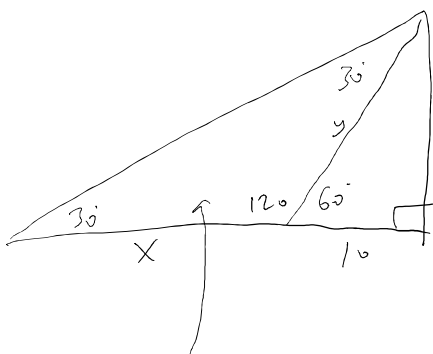


$$\frac{x+t}{t} = \frac{r}{h}$$

$$x+t = \frac{tr}{h}$$

$$x = \frac{tr}{h} - t$$

12.

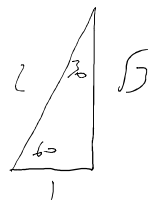


THIS IS AN
ISOSCELES
TRIANGLE SO $x = y$.

$$\tan 60^\circ = \frac{10}{y}$$

$$\sqrt{3} = \frac{10}{y}$$

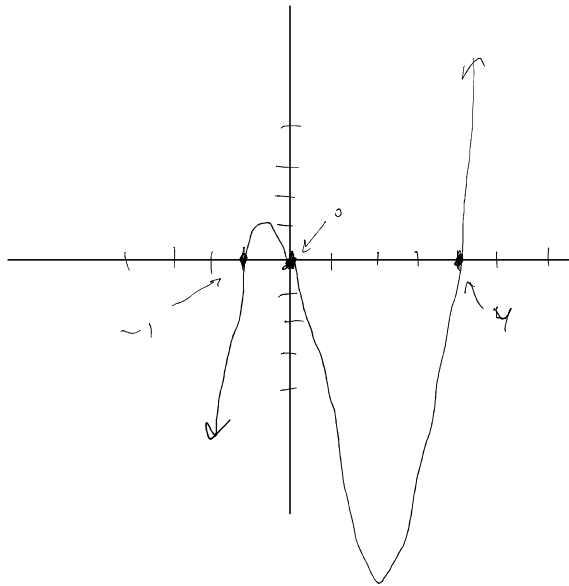
$$y = \frac{10}{\sqrt{3}}$$



$$\tan 60^\circ = \sqrt{3}$$

$$x = \frac{10}{\sqrt{3}} \quad \text{or} \quad \frac{10\sqrt{3}}{3}$$

13.



$$y = x^3 - 3x^2 - 4x$$

$$y = x(x^2 - 3x - 4)$$

$$y = x(x-4)(x+1)$$

x	y
5	30
2	-12

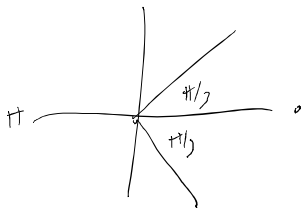
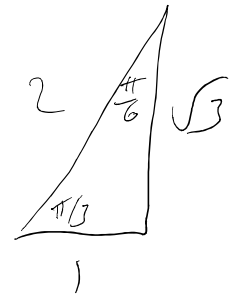
14. $2\cos^2 x + 5\cos x - 3 = 0$

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

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

$$\cos x = -3$$

↖ no solution



$$x = \frac{\pi}{3}$$

15.

let t = time temperature rises.

$$10 + 8t - 4 \frac{t}{2} = 60$$

$$8t - 2t = 50$$

$$6t = 50$$

$$t = \frac{50}{6} = \frac{25}{3} \text{ minutes}$$