

12, 16, 18, 20, 14

$$12. \quad y^3 + 6y^2 - 27y$$

$$-27y$$

$$y^3 + 6y^2 - 27y = 0$$

$$y(y^2 + 6y - 27) = 0 \quad \begin{matrix} 1 & 27 \\ 3 & 9 \end{matrix}$$

$$y(y + 9)(y - 3) = 0$$

$$y^2 - 3y + 9y - 27$$

$$y^2 + 6y - 27 \checkmark$$

$$y = 0 \quad y + 9 = 0 \quad y - 3 = 0$$

$$y = -9$$

$$y = 3$$

$$14. \quad 6x^2 = 1 - x$$

$$-1 + x \quad -1 + x$$

$$\begin{matrix} 1, 6 \\ 2, 3 \end{matrix} \quad 6x^2 + x - 1 = 0$$

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

$$6x^2 - 2x + 3x - 1$$

$$6x^2 + x - 1 \checkmark$$

$$2x + 1 = 0$$

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

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

$$3x - 1 = 0$$

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

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

$$16. \quad 10t^2 - 9t = 1$$

$$10t^2 - 9t - 1 = 0$$

$$5 \cdot 2 \quad 1 \cdot 10 \quad (t - 1)(10t + 1) = 0$$

$$t - 1 = 0$$

$$\quad +1$$

$$t = 1$$

$$10t + 1 = 0$$

$$\quad -1$$

$$\frac{10t = -1}{10}$$

$$t = -1/10$$

$$18. \quad 5x - 1 = 6x^2$$

$$-5x + 1$$

$$0 = 6x^2 - 5x + 1$$

$$0 = \overset{6 \cdot 1}{\cancel{2 \cdot 3}} (2x - 1)(3x - 1)$$

$$6x^2 - 2x - 3x + 1$$

$$6x^2 - 5x + 1$$

$$0 = 2x - 1$$

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

$$x = 1/2$$

$$0 = 3x - 1$$

$$\quad +1$$

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

$$x = 1/3$$

$$20. \quad (u + 3)(u - 3) = 8u$$

$$u^2 - \cancel{3u} + \cancel{3u} - 9 = 8u$$

$$u^2 - 9 = 8u$$

$$\quad -8u$$

$$u^2 - 8u - 9 = 0$$

$$(u + 1)(u - 9) = 0$$

$$u^2 - 9u + u - 9$$

$$u^2 - 8u - 9 \checkmark$$

$$u + 1 = 0$$

$$u = -1$$

$$u - 9 = 0$$

$$u = 9$$

1/28

Solve

$$12. \quad y^3 + 6y^2 = 27y$$

16.

$$\underline{10t^2 - 9t = 1}$$

$$t = 1 \quad t = -1/10$$

$$\boxed{10t^2 - 9t - 1 = 0}$$

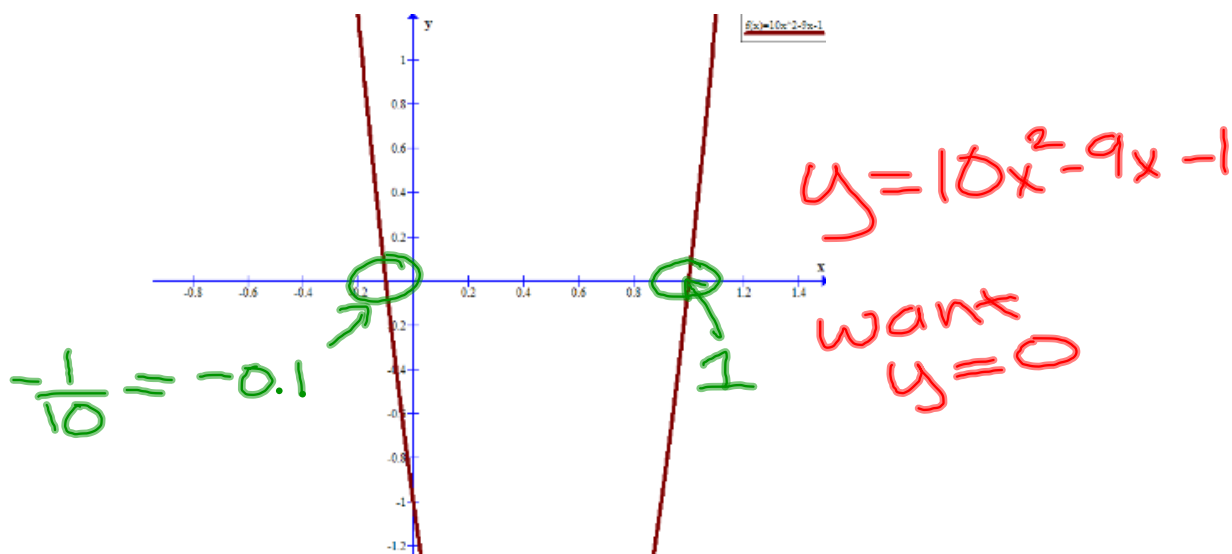
$$y = 10x^2 - 9x - 1$$

$$\begin{matrix} 5 & 2 \\ 1 & 10 \end{matrix} (t - 1)(10t + 1) = 0$$

$$\begin{array}{l} t - 1 = 0 \\ \quad +1 \\ \hline t = 1 \end{array}$$

$$\begin{array}{l} 10t + 1 = 0 \\ \quad -1 \\ \hline 10t = -1 \\ \quad 10 \end{array}$$

$$t = -1/10$$



$$y^2 + 7y = 18$$

$$y^2 + 7y - 18 = 0$$

$$x^2 + 7x - 18 = y$$

1) Get everything on one side. sign doesn't matter!

2) rewrite as $y = ax^2 + bx + c$

3) GRAPH

→ "Y=" button
enter the EQ
→ "GRAPH"

We then want to find the ZEROS

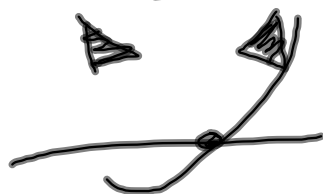
→ 2nd Trace → CALC

→ Select 2: Zero

→ it will prompt
Left Bound?

→ scroll to point of L of point
hit enter

→ Right Bound?



$$y = 0 \quad (x = 2)$$