Anything on Part 1 is fair game for Part 2.

$|2x-5| = 7$

$2x-5=7$ OR $2x-5=-7$

$2x=12$ $\quad 2x=-2$

$x=6$ $\quad x=-1$

$x \in \{-1, 6\}$

$|2x-5| < 7$

$2x-5 < 7$ AND $2x-5 > -7$

$2x < 12$ AND $2x > -2$

$\{x \mid x < 6$ AND $x > -1\}$

$= (-1, 6)$

$|2x-5| > 7$

$2x-5 > 7$ OR $2x-5 < -7$

$2x > 12$ OR $2x < -2$

$\{x \mid x > 6$ OR $x < -1\}$

$= (-\infty, -1) \cup (6, \infty)$

$|2x-5| < -7$

$\emptyset$

$|2x-5| > -7$

$(-\infty, \infty)$

$|3x-4| = 7$ Last version!

#9 $x = 28$, not 38

$$\left(\frac{3x^5y^{-7}}{x^3y^4}\right)^{-11}$$

Simplify.

Positive Exponents only.

$$\frac{a^b}{a^c} = a^{b-c}$$

$$\frac{x^3}{x^5} = x^{3-5}$$

$$= \left(\frac{3x^{5-3}}{y^4y^7}\right)^{-11} = \left(\frac{3x^2}{y^{11}}\right)^{-11}$$

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

$$= \frac{3^{-11}(x^2)^{-11}}{(y^{11})^{-11}} = \frac{3^{-11}x^{-22}}{y^{-121}} = \boxed{\frac{y^{121}}{3^{11}x^{22}}}$$

$$\left(\frac{3x^5y^{-7}}{x^3y^4}\right)^{-11} = \left(\frac{3x^5}{x^3y^4y^7}\right)^{-11} = \left(\frac{3x^{5-3}}{y^{4+7}}\right)^{-11}$$

$$\left(\frac{6x^{-5}z^4y^3}{2x^{-6}z^{-3}y^{-2}}\right)^{-5}$$

$$= \left(\frac{3x^6z^4z^3y^3y^2}{x^5}\right)^{-5}$$

$$= \left(3x^{6-5}z^{4+3}y^{3+2}\right)^{-5}$$

$$= \left(3xz^7y^5\right)^{-5} = 3^{-5}(z^7)^{-5}(y^5)^{-5}x^{-5}$$

$$= 3^{-5}z^{-35}y^{-25}x^{-5}$$

$$= \frac{1}{3^5z^{35}y^{25}x^5}$$

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$x^2 - 9 = 0$

$x^2 - 3^2 = 0$ $\qquad a^2 - b^2 = (a-b)(a+b)$

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

$x = 3$ or $x = -3$

$(3x)^2 = 3^2 x^2$

$9x^2 - 25 = 0$

$3^2 x^2 - 25 = 0$

$(3x)^2 - 5^2 = 0$

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

$3x - 5 = 0$ OR $3x + 5 = 0$

$3x = 5$

$x = \frac{5}{3}$ OR $x = -\frac{5}{3}$

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$(a+b)^2 = a^2 + 2ab + b^2$

$(a+b)(a+b) =$

$= a^2 + 2ab + b^2$

$4x^2 + 20x + 25 = 0$

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

$a^2 + 2ab + b^2 = (a+b)^2$

$2ab = 2(2x)(5) = 20x$

Bonus.

$8x^3 - 27 = 0$

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

$a^3 - b^3 =$

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

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

$a^3 - b^3 \quad (a-b)(a^2+ab+b^2)$

$(2x-3)(4x^2+6x+9) = 0$ → is never zero if x is real.

$\Rightarrow 2x - 3 = 0$

$2x = 3$

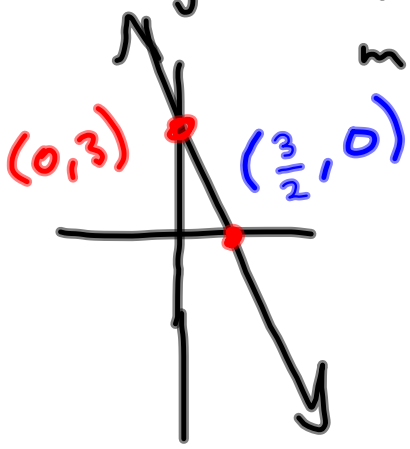
$\boxed{x = \frac{3}{2}}$

$2|8 \quad 2|4 \quad 2$

$3|27 \quad 3|9 \quad 3$

$y = -2x + 3$

$mx + b$



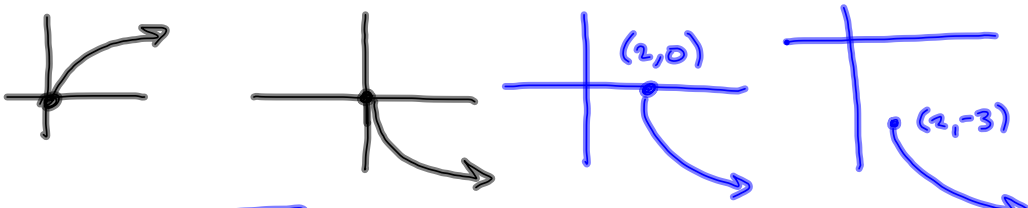
$y = -2x + 3 = 0$

$-2x = -3$

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

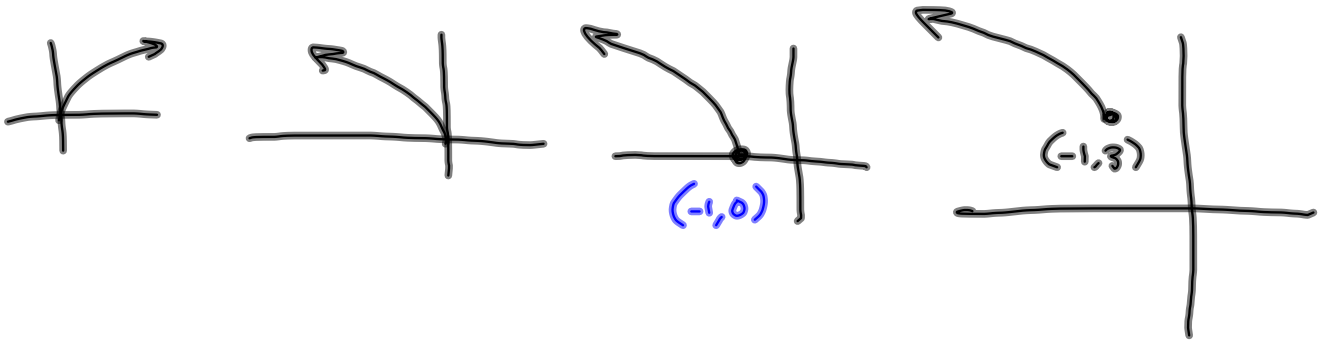
$y = -\sqrt{x-2} - 3$ Negative OUTside

$\sqrt{x}$ $-\sqrt{x}$ $-\sqrt{x-2}$ $-\sqrt{x-2} - 3$



$y = \sqrt{-x-1} + 3 = \sqrt{-(x+1)} + 3$ NEGATIVE INside

$\sqrt{x}$ $\sqrt{-x}$ $\sqrt{-(x+1)}$ $\sqrt{-(x+1)} + 3$



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Ambiguous

No

$-1/2x$

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

Yes

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

$(-1/2)x$