18. $\frac{4+\sqrt{2}}{2-\sqrt{2}} \cdot \frac{2+\sqrt{2}}{2+\sqrt{2}} = \frac{8+4\sqrt{2}+2\sqrt{2}+\sqrt{4}}{4+\cancel{2\sqrt{2}}-\cancel{2\sqrt{2}}-\sqrt{4}}$

-2

$= \frac{10+6\sqrt{2}}{2} = 5+3\sqrt{2}$

7. Determine (yes/no) whether the functions below are inverse functions. Be sure to show all of the work for both compositions, $[f \circ g](x)$ and $[g \circ f](x)$ to prove.

$f(x) = 10 - \frac{x}{2}$ $\quad g(x) = 20 - 2x$

$f(20-2x) = 10 - \left(\frac{20-2x}{2}\right)$

$= 10 - (10 - x)$

$= 10 - 10 + x$

$= x$

$g\left(10 - \frac{x}{2}\right) = 20 - 2\left(10 - \frac{x}{2}\right)$

$= 20 - 20 + \frac{2x}{2}$

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

$= x$

yes

15. $2\sqrt{50} + \sqrt{45} - \sqrt{8}$

$2\sqrt{25}\sqrt{2}$ $\quad \sqrt{9}\sqrt{5}$ $\quad \sqrt{4}\sqrt{2}$

$2 \cdot 5\sqrt{2}$

$10\sqrt{2} + 3\sqrt{5} - 2\sqrt{2}$

$8\sqrt{2} + 3\sqrt{5}$

$y = \sqrt{3x+9} - 2$

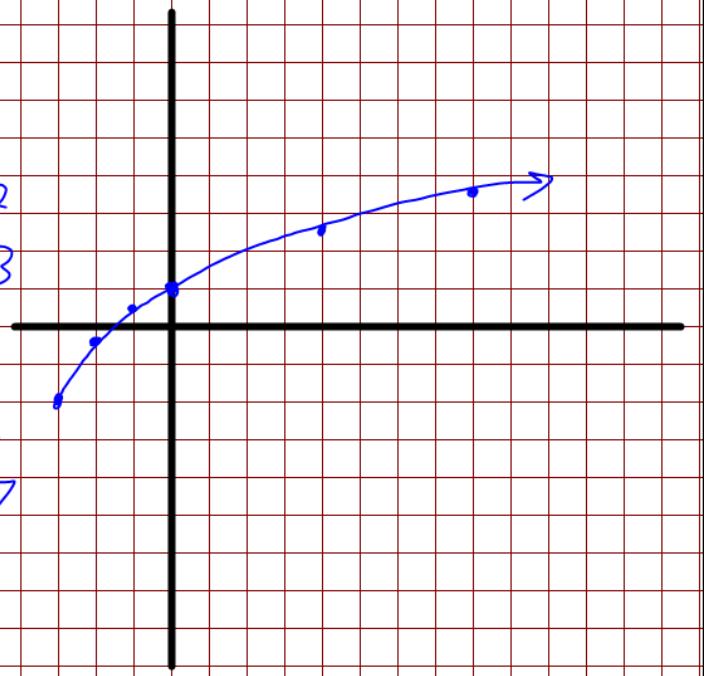
$3x + 9 \geq 0$

$3x \geq -9$

$x \geq -3$ Domain

$y \geq -2$ Range

x	y
-3	-2
-2	-.3
-1	.4
0	1
4	2.6
8	3.7



$x^2 \cdot x^5 = x^7$

$(x^3)^4 = x^{12}$

$\frac{x^8}{x^3} = x^5$

a. $\dfrac{c^{\frac{12}{5}} \cdot c^{\frac{3}{5}}}{c^3} = \dfrac{c^{\frac{15}{5}}}{c^3} = \dfrac{c^3}{c^3} = c^0 = 1$

b. $\left(n^{\frac{3}{\cancel{4}\,1}}\right)^{\frac{\cancel{8}\,2}{5}} = n^{\frac{24}{20}} = n^{\frac{6}{5}}$

c. $\dfrac{x^{\frac{9}{4}}}{x^{\frac{3}{2} \cdot \frac{2}{2}}} = \dfrac{x^{\frac{9}{4}}}{x^{\frac{6}{4}}} = x^{\frac{3}{4}}$

20

a. $\sqrt[2]{12^1 x^3 b^{10}}$

$12^{\frac{1}{2}} x^{\frac{3}{2}} b^{\frac{10}{2}}$

$12^{\frac{1}{2}} x^{\frac{3}{2}} \boxed{b^5}$

b. $\sqrt[4]{h^7}$

$h^{\frac{7}{4}}$

6. $f(x) = -2x + 4$

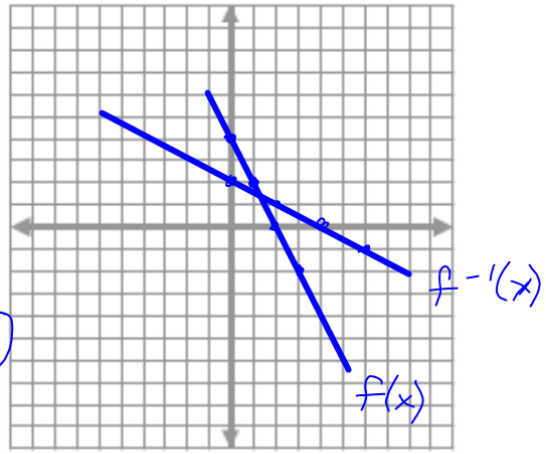
$y = -2x + 4$

$x = -2y + 4$

$\frac{1x - 4}{-2} = \frac{-2y}{-2}$

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

$-\frac{1}{2}x + 2 = f^{-1}(x)$



28. $L = \pi r\sqrt{r^2 + h^2}$

$\frac{65\cancel{\pi}}{5\cancel{\pi}} = \frac{\cancel{\pi(5)}\sqrt{5^2 + h^2}}{\cancel{\pi(5)}}$

$(13)^2 = \left(\sqrt{25 + h^2}\right)^2$

$169 = 25 + h^2$

$\pm\sqrt{144} = \sqrt{h^2}$

$\pm 12 = h$

12 m

25. $-4+(3x+6)^{\frac{1}{2}}=18$

$\left(\sqrt{3x+6}\right)^2=(22)^2$

$3x+6=484$

$3x=478$

$x=\frac{478}{3}$

$-4+\sqrt{\cancel{3}\left(\frac{478}{\cancel{3}}\right)+6}=18$

$-4+\sqrt{484}=$

$-4+22=$

$18=18$

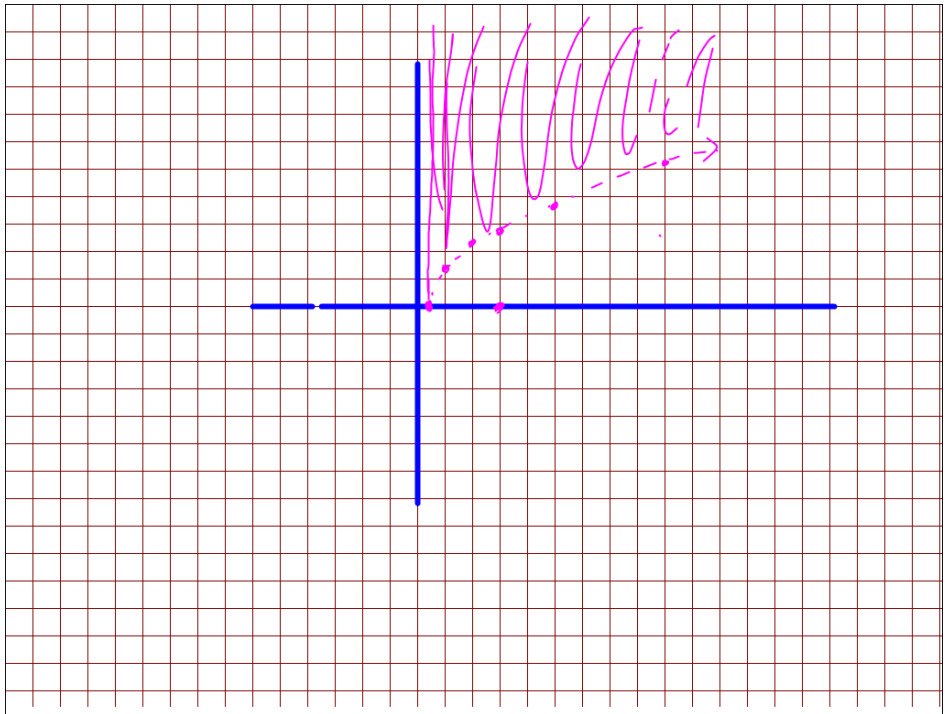
13. $4\sqrt{50x^{16}}$

$4\sqrt{50}\quad\sqrt{x^{16}}$

$4\sqrt{25}\sqrt{2}\quad x^8$

$4\cdot 5\sqrt{2}\quad x^8$

$20x^8\sqrt{2}$



$\sqrt[4]{a}$ $\sqrt[3]{n^9}$

$$32^{-\frac{2}{5}} = \frac{1}{32^{\frac{2}{5}}} = \frac{1}{\sqrt[5]{32^2}} = \frac{1}{4}$$

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(14) $(4\sqrt{12})(3\sqrt{20})$

$12\sqrt{240}$

$12\sqrt{16}\sqrt{15}$

$12 \cdot 4\sqrt{15}$

$48\sqrt{15}$