Rationalize the denominator.

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

| | $\sqrt{10}$ | $-3$ |
|---|---|---|
| $\sqrt{5}$ | $\sqrt{50} = 5\sqrt{2}$ | $-3\sqrt{5}$ |
| $+\sqrt{2}$ | $\sqrt{20} = 2\sqrt{5}$ | $-3\sqrt{2}$ |

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

$(\sqrt{5})^2 - (\sqrt{2})^2$

$5 - 2$

$= -3$

Skills that you already have that will be used the rest of this chapter.

Solve for y

$$x = \frac{\sqrt[3]{2y-7}}{8} + 6$$

$$y = \frac{(8(x-6))^3 + 7}{2}$$

Solve.

$$2x^{\frac{2}{3}} + 13 = 31$$

$$-13 \quad -13$$

$$\frac{2x^{2/3}}{2} = \frac{18}{2}$$

$$x^{2/3} = 9$$

$x^{2/3} \rightarrow \sqrt{(\sqrt[3]{x})^2} = \sqrt{9}$

$(\sqrt[3]{x})^3 = (\pm 3)^3$

$x = \pm 27$

–OR–

$(x^{2/3})^{3/2} = (9)^{3/2}$

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

$= (\pm 3)^3$

$x = \pm 27$

Solve

$$(x-6)^2 = x - 4$$

$x^2 - 12x + 36 = x - 4$

$-x \quad +4 \quad -x \quad +4$

$x^2 - 13x + 40 = 0$

$(x-8)(x-5) = 0$

40, $-8$, $-5$, $-13$

$x = 8, 5$

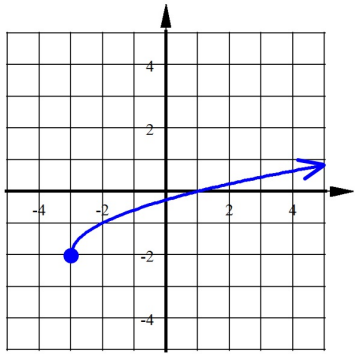
## State the Domain and Range.

Domain:

$x \geq -3$

Range:

$y \geq -2$



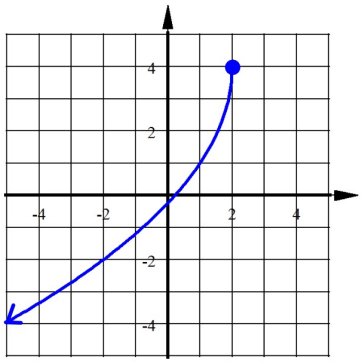

## State the Domain and Range.

Domain:

$x \leq 2$

Range:

$y \leq 4$



# Chapter 7 Quiz Tuesday

Rationalize all denominators and simplify.

1. $\dfrac{12}{\sqrt[5]{8w^6x^3y^9}} = \dfrac{12}{\sqrt[5]{2^3w^6x^3y^9}} \cdot \dfrac{\sqrt[5]{2^2w^4x^2y}}{\sqrt[5]{2^2w^4x^2y}}$

$\sqrt[5]{2^5w^{10}x^5y^{10}}$

$= \dfrac{12\sqrt[5]{2^2w^4x^2y}}{2w^2xy^2}$

$= \dfrac{6\sqrt[5]{2^2w^4x^2y}}{w^2xy^2}$

Simplify each.

2a. $\sqrt[4]{9a^6b^2} \cdot \sqrt[4]{33ab^{13}c^9} \cdot \sqrt[4]{18a^{11}c^3}$

$3^2$ $3\cdot 11$ $3\cdot 6$

$= \sqrt[4]{3^4 \cdot 11 \cdot 6\, a^{18} b^{15} c^{12}}$

$= 3a^4 b^3 c^3 \sqrt[4]{66a^2b^3}$