

Simplify.

1)  $\sqrt[3]{25xy^8} \cdot \sqrt[3]{5x^4y^3}$   
 $\sqrt[3]{125x^5y^{11}}$   
 $\sqrt[3]{125} \sqrt[3]{x^5} \sqrt[3]{y^9} / \sqrt[3]{x^2} \sqrt[3]{y^2}$   
 $\boxed{5xy^3 \sqrt[3]{x^2y^2}}$

2)  $\frac{\sqrt[3]{192x^8}}{\sqrt[3]{3x}}$   
 $\sqrt[3]{64x^7} / \sqrt[3]{x}$   
 $\boxed{4x^2 \sqrt[3]{x}}$

3)  $\frac{(256t^{12})^{-1/4}}{5^8}$   
 $\left(\frac{5^8}{256t^{12}}\right)^{1/4}$   
 $\boxed{\frac{5^2}{4t^3}}$

4)  $3\sqrt{32} + 2\sqrt{50}$   
 $12\sqrt{2} + 10\sqrt{2}$   
 $\boxed{22\sqrt{2}}$

5)  $\sqrt{28} + 4\sqrt{63} - 2\sqrt{7}$   
 $2\sqrt{7} + 12\sqrt{7} - 2\sqrt{7}$   
 $\boxed{12\sqrt{7}}$

6)  $\frac{(2-5\sqrt{3})(4-\sqrt{3})}{(4+\sqrt{3})(4-\sqrt{3})}$   
 $\frac{8 - 2\sqrt{3} - 20\sqrt{3} + 5\sqrt{9}}{16 - 4\sqrt{3} + 4\sqrt{3} - \sqrt{9}}$   
 $\frac{8 - 22\sqrt{3} + 15}{16 - 3}$   
 $\frac{23 - 22\sqrt{3}}{13}$   
 $\frac{23 - 22\sqrt{3}}{(2+\sqrt{3})(3-2\sqrt{3})}$   
 $6 - 4\sqrt{3} + 3\sqrt{3} - 2\sqrt{9}$   
 $6 - 1\sqrt{3} - 6$   
 $\boxed{-1\sqrt{3}}$

7)  $\frac{(3-\sqrt{10})(\sqrt{5}+\sqrt{2})}{(\sqrt{5}-\sqrt{2})(\sqrt{5}+\sqrt{2})}$   
 $\frac{3\sqrt{5} + 3\sqrt{2} - \sqrt{50} - \sqrt{20}}{\sqrt{25} + \sqrt{10} - \sqrt{10} - \sqrt{4}}$   
 $\frac{3\sqrt{5} + 3\sqrt{2} - 5\sqrt{2} - 2\sqrt{5}}{5-2}$   
 $\boxed{\frac{1\sqrt{5} - 2\sqrt{2}}{3}}$

8)  $\frac{\sqrt[4]{200x^7y^3}}{\sqrt[4]{5x^2y^3}}$   
 $\sqrt[4]{40x^5}$   
 $\sqrt[4]{x^4} / \sqrt[4]{40} \sqrt[4]{x}$   
 $\boxed{x \sqrt[4]{40x}}$

Solve. Check for extraneous solutions.

10)  $(\sqrt{4x+2})^2 = (\sqrt{3x+4})^2$   
 $4x + 2 = 3x + 4$   
 $-3x \quad -3x$   
 $x + 2 = 4$   
 $-2 \quad -2$   
 $\boxed{x = 2}$

11)  $(2x+7)^{1/2} - x = 2$   
 $\frac{+x}{+x} + x$   
 $((2x+7)^{1/2})^2 = (x+2)^2$   
 $2x+7 = (x+2)(x+2)$   
 $2x+7 = x^2 + 4x + 4$   
 $-2x-7 \quad -2x-7$   
 $0 = x^2 + 2x - 3$   
 $0 = (x+3)(x-1)$   
 $\cancel{x = -3} \quad \boxed{x = 1}$

12)  $(\sqrt{x+1})^2(x+1)^2$

$x+1 = (x+1)(x+1)$

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

$0 = x^2 + x$

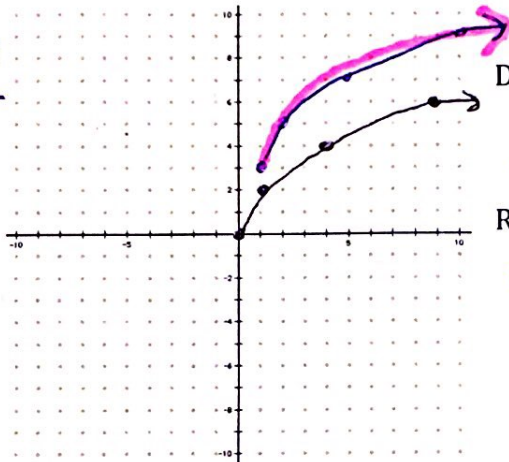
$0 = x(x+1)$

$x=0$     $x=-1$

Graph and state the domain and range.

14)  $f(x) = 2\sqrt{x-1} + 3$

$x$	$y$
0	0
1	2
4	4
9	6



Domain:

$x \geq 1$

Range:

$y \geq 3$

Horizontal shift? right 1

Vertical shift? up 3

Vertical stretch, shrink, or reflection if any?

stretch, no reflection

13)  $2\sqrt{x-1} - \sqrt{26+x} = 0$

$(2\sqrt{x-1})^2 = (\sqrt{26+x})^2$

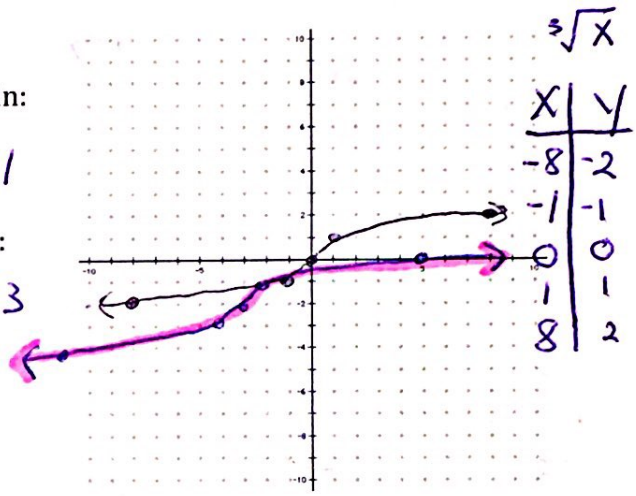
$4(x-1) = 26+x$

$4x-4 = 26+x$

$3x-4 = 26$

$\frac{3x}{3} = \frac{30}{3}$   
 $x = 10$

15)  $f(x) = \sqrt[3]{x+3} - 2$



Domain:

all real #'s

Range:

all real #'s

Horizontal shift? left 3

Vertical shift? down 2

Vertical stretch, shrink, or reflection if any?

no stretch/shrink  
no reflection

16) Given  $f(x) = 8\sqrt{x+4} - 3$  describe the following.

a) Horizontal shift: left 4

b) Vertical shift: down 3

c) Vertical stretch, shrink, or reflection if any: stretch

d) Domain:  $x \geq -4$

e) Range:  $y \geq -3$

17) 56, 32, 54, 34, 23, 67, 23, 45, 12, 32, 34, 24, 36, 47, 19, 43

a) mean: 36.3

b) median: 34

c) Q1: 23.5

d) Q3: 46

e) mode: 32, 34, and 23

f) range: 55

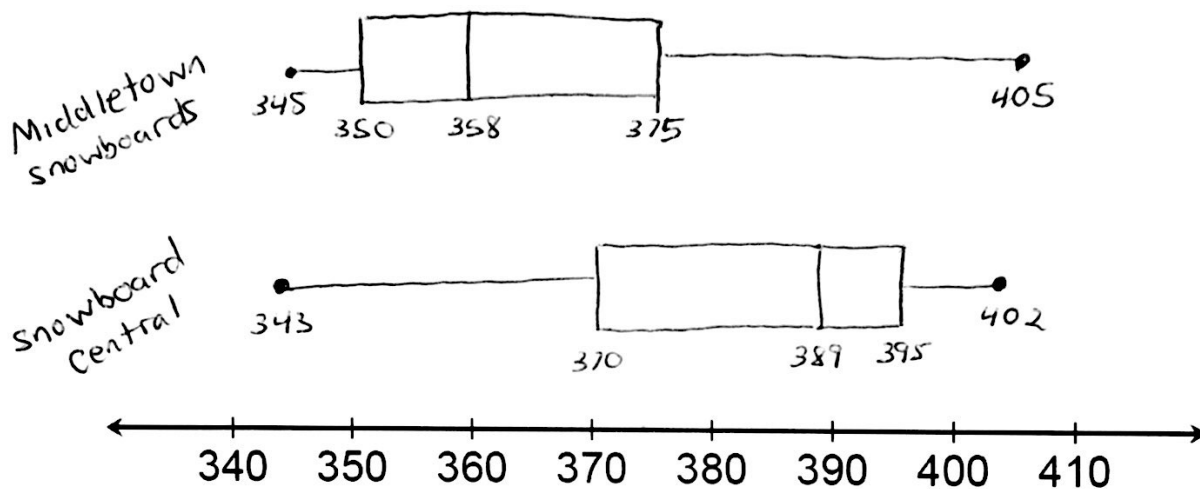
g) interquartile range: 22.5

18) Below are the prices of snowboards at two competing snowboard stores:

**Middletown Snowboards**  
345, 350, 356, 360, 375, 405

**Snowboard Central**  
343, 370, 386, 392, 395, 402

a) Draw a double box-and-whisker plot of the above data on the scale below:



b) What is the median price for a snowboard at Middletown Snowboards? 358

What is the lowest price you could pay for a snowboard at Snowboard Central? 343

What is the most expensive board at Middletown Snowboards? 405

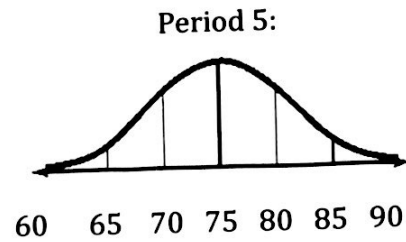
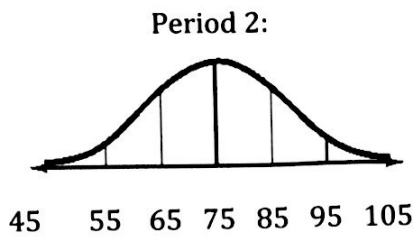
What is the range of prices for snowboards at Snowboard Central? 59

How spread out is the middle half of Middletown Snowboards? 25

Which store would you rather buy a snowboard from? Why?

Middletown because median price is much lower and middle half of prices is much lower as well.

19. The two normal distribution curves represent test scores on the Cumulative Test.



a) In a normal curve, is the mean = median, mean < median, or the mean > median?

mean = median

b) What is the standard deviation of Period 2? Period 5?

Period 2: 10      Period 5: 5

c) What is the mean of Period 2? Period 5?

Period 2: 75      Period 5: 75

d) What period did better on the test, why?

Period 5, all students passed

e) What percentage of students in period 2 got a 65% or above? In period 5?

Period 2: 84%      Period 5: 97.5%

f) In period 2, what value is +2 standard deviations from the mean? -2.5 standard deviations from the mean?

95

50