

1-27-15

Radical Functions

Jan 22-7:15 PM

1-27-15

Day 5

① $2xy\sqrt[4]{y^3}$ ② $\frac{1}{\sqrt[5]{(7t)^2}}$ ③ $2^{\frac{1}{8}}x^{\frac{1}{2}}$

④ $3+16\sqrt{5}$ ⑤ $23-17\sqrt{2}$ ⑥ $30+14\sqrt{3}$

⑦ $155-77\sqrt{2}$ ⑧ $10+6\sqrt{3}$

⑨ $6x$ ⑩ $7x^2$ ⑪ $10x$

⑫ $\frac{13}{72}$ ⑬ $\frac{13}{60}$ ⑭ $-\frac{7}{10}$ ⑮ $-\frac{3}{7}$

⑯ x^2-2x+7 ⑰ $2x^3-3x^2+8x-12$ ⑱ $2x^2+5$ ⑲ 53

Jan 28-9:27 AM

⑬ ⑭ sum

$\frac{1}{5\sqrt{16}} + \frac{1}{3\sqrt{16}}$

$-\frac{2}{5\sqrt{8}} - \frac{3}{\sqrt{16}}$

Jan 28-9:33 AM

1-27-15

Bellwork

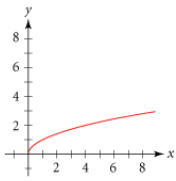
Let $f(x)=2x-1$ and $g(x)=-3x+4$

- Find $(f+g)(x)$
- Find $(f/g)(2)$
- Find $f(g(x))$

Jan 26-5:42 PM

Square Root Function
 Sketch a graph of: $f(x) = \sqrt{x}$

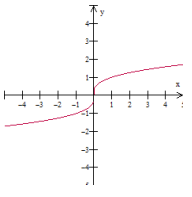
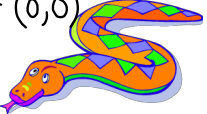
Domain: $[0, \infty)$
 Range: $[0, \infty)$
 X-int $(0, 0)$
 Y-int $(0, 0)$



Feb 28-11:29 AM

Cube Root Function
 Sketch a graph of: $f(x) = \sqrt[3]{x}$

Domain: $(-\infty, \infty)$
 Range: $(-\infty, \infty)$
 X-int $(0, 0)$ "Lazy S"
 Y-int $(0, 0)$

Feb 28-11:29 AM

Parent Graph: $f(x) = \sqrt{x}$
 Transformed Graph: $f(x) = a\sqrt{x-h} + k$

$(x-h)$ move right h units If $|a| > 1$: vertical stretch
 $(x+h)$ move left h units If $0 < |a| < 1$: vertical shrink

If $k > 0$ (positive), move up k units
 If $k < 0$ (negative), move down k units

negative outside the parent graph: reflection across x-axis

Feb 3-2:18 PM

Parent Graph: $f(x) = \sqrt[3]{x}$
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negative outside the parent graph: reflection across x-axis

Feb 3-2:18 PM

Determine the parent graph. Then, describe the transformations.

A) $f(x) = \sqrt{x+7} + 2$ $f(x) = \sqrt{x}$ left 7 up 2

B) $g(x) = \frac{1}{2}\sqrt[3]{x} + 3$ $f(x) = \sqrt[3]{x}$ up 3 Vert shrink

C) $h(x) = -\sqrt{x-5}$ $f(x) = \sqrt{x}$ Right 5 Reflect x-axis

D) $f(x) = 4\sqrt{x-5}$ $f(x) = \sqrt{x}$ Down 5 Vert stretch

E) $k(x) = \sqrt[3]{x+1}$ $f(x) = \sqrt[3]{x}$ left 1

Jan 22-7:41 PM

Ex 1 Graph

$f(x) = \sqrt{x-2}$ \leftarrow $\begin{matrix} \text{R} \\ + \\ 2 \end{matrix}$

Domain: $[2, \infty)$

Range: $[0, \infty)$

x-int: $(2, 0)$

y-int: NONE

Feb 25-8:11 AM

Ex 2 Graph

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

Domain: $[-1, \infty)$

Range: $(-\infty, -1]$

x-int: None

y-int: $(0, -2)$

Feb 25-8:11 AM

Ex 3 Graph

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

Domain: $(-\infty, 3]$

Range: $[1, \infty)$

x-int: None

y-int: $(0, 2.73)$

Feb 25-8:11 AM

Ex 4 Graph

$$f(x) = -\sqrt{4-x}$$

Domain:

Range:

x-int:

y-int:

Feb 25-8:11 AM

Ex 5 Graph

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

Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

x-int: $(8, 0)$

y-int: $(0, -2)$

Feb 25-8:11 AM

Ex 6 Graph

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

Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

x-int: $(-2, 0)$

y-int: $(0, -1.26)$

Feb 25-8:11 AM

Ex 7 Graph

$$f(x) = \sqrt[3]{-x} + 1$$

Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

x-int: $(1, 0)$

y-int: $(0, 1)$

Feb 25-8:11 AM

Ex 8 Graph

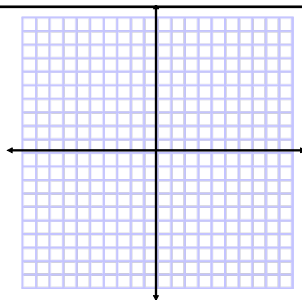
$$f(x) = -\sqrt[3]{2-x} - 1$$

Domain:

Range:

x-int:

y-int:



Conclusion

1. What transforms a graph left/right?
2. What reflects a graph over the x-axis?
3. What is different between the square root and the cube root (domain)?
4. Questions???

Feb 25-8:11 AM

Jan 25-1:41 PM

Assignment:
Radical Function Wkst

Feb 25-8:14 AM

Jan 27-10:06 AM