10.) $\left(\frac{5^5}{2^5}\right)^{-1/5}$

$\left(\frac{5^{-1}}{2^{-1}}\right) = \frac{2}{5}$

11.) $\sqrt[4]{16x^3y^4z} = 2x^a yz^b$

$2x^{3/4}\,y\,z^{1/4}$

$\frac{3}{4} + \frac{1}{4}$

1

13.) $\left(\frac{2}{5}x^{-1/4}\right)\left(5x^{13/4}\right)$

$2x^3 = 2(3)^3 = 54$

13.) $y = \frac{x}{x+5}$

Find the inverse

$\frac{x}{1} = \frac{y}{y+5}$

$* \quad xy + 5x = y$

$5x = y - xy$

$5x = y(1-x)$

$y^{-1} = \frac{5x}{1-x}$

$y^{-1} = \frac{5x}{-(x-1)}$

$y^{-1} = \frac{-5x}{x-1}$

25.) $(f - m)(-2)$

$(\underbrace{-x^2 - 4x - 3 - (-x)})(-2)$

$(-x^2 - 3x - 3)(-2)$ $\qquad -2^2 \neq (-2)^2$

$-4 + 6 - 3$

-1

24.) $\frac{5}{x+3} + \sqrt{3x+26}$

$$\frac{5}{-\frac{1}{3}+3} + \sqrt{3\left(\frac{-1}{3}\right)+26}$$

$$\frac{5}{\frac{8}{3}} + \sqrt{25}$$

$$\frac{15}{8} + 5 = \frac{55}{8}$$

Ch 3 Review

ex: Simplify.

a) $\frac{10}{\sqrt[5]{27}} \cdot \frac{\sqrt[5]{9}}{\sqrt[5]{9}} = \frac{10\sqrt[5]{9}}{3}$

b) $-9^{-3/2} = -1 \cdot 9^{-3/2} = \frac{-1}{9^{3/2}} = \frac{-1}{27}$

ex: Simplify.

c) $\sqrt[4]{243a^{14}b^{24}c^{2}}$

$3|a^{3}|b^{6}\sqrt[4]{3a^{2}c^{2}}$

d) $\sqrt[5]{243x^{16}y^{10}}$

$3x^{3}y^{2}\sqrt[5]{x}$

ex: Given:

$$f(x) = x^2 - 9 \qquad g(x) = \sqrt{x+2}$$

$$h(x) = x - 1 \qquad m(x) = 6x^{-2}$$

Find the expression and the domain.

a) $(g \circ h)(x) = \sqrt{x+1}$ D: $[-1, \infty)$

ex: Given:

$$f(x) = x^2 - 9 \qquad g(x) = \sqrt{x+2}$$

$$h(x) = x - 1 \qquad m(x) = 6x^{-2} = \frac{6}{x^2}$$

Find the expression and the domain.

b) $(m - f)(x) = \frac{6}{x^2} - x^2 + 9$ $\quad D: \{x \mid x \neq 0\}$

ex: Given:

$$f(x) = x^2 - 9 \qquad g(x) = \sqrt{x+2}$$

$$h(x) = x - 1 \qquad m(x) = 6x^{-2}$$

Find the expression and the domain.

c) $(fm)(x) = (x^2 - 9)\frac{6}{x^2}$

$= 6 - \frac{54}{x^2}$

D: $\{x \mid x \neq 0\}$

ex: Given:

$$f(x) = x^2 - 9 \qquad g(x) = \sqrt{x+2}$$

$$h(x) = x - 1 \qquad m(x) = 6x^{-2}$$

Find the expression and the domain.

d) $(m \circ f)(x) = \dfrac{6}{(x^2-9)^2}$ $\qquad D: \{x \mid x \neq 3, -3\}$

$$\frac{6}{(x+3)^2(x-3)^2}$$

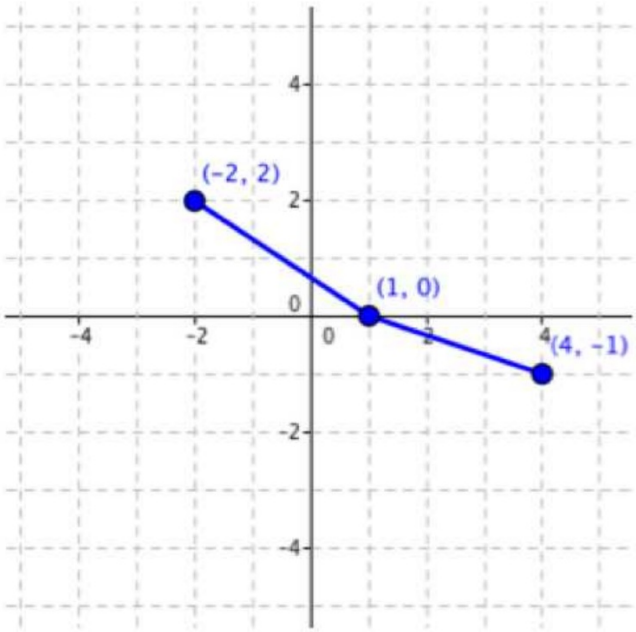
ex: Solve.

a) $\sqrt{2x+15}-\sqrt{x+11}=1$

ex: Solve.

b) $3(x-2)^{4/3}+5=53$

ex: Use the graph of f to find each value.



a) $f^{-1}(0)$

b) $f^{-1}(2)$

c) $\left(f \circ f^{-1}\right)\left(-\frac{1}{2}\right)$

ex: Which function is equivalent to its inverse?

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

B $g(x) = \frac{3 - x}{3}$

C $h(x) = 7 - x$

D $j(x) = x - 4$

ex: Sketch and state the domain and range in interval notation.

$$y = -4\sqrt[3]{x+2} - 1$$

ex:

Which function does <u>not</u> have an inverse function?

A $f(x) = 2x + 7$

B $f(x) = \sqrt{x} + 12$

C $f(x) = \sqrt{-6x + 9}$

D $f(x) = 8 - 3x^2$

ex:

If $f(x) = \sqrt{x^2 - 1}$ and $g(x) = \sqrt{x - 1}$, which expression represents $\frac{f(x)}{g(x)}$, for $x > 1$?

A $\sqrt{x}$

B $\sqrt{x - 1}$

C $\sqrt{x + 1}$

D $\frac{1}{\sqrt{x + 1}}$

ex: Solve algebraically for x:

$$\sqrt{x^2 + x - 1} + 11x = 7x + 3$$

ex: Which function is one-to-one?

1) $k(x) = x^2 + 2$

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

3) $f(x) = |x| + 2$

4) $j(x) = x^4 + 2$

ex: State the domain in set notation.

$$y = \frac{3x+1}{\sqrt{x-4}}$$

$[4, \infty)$

$\{x \mid x \geq 4\}$

$(4, \infty)$

$\{x \mid x > 4\}$

ex:

The sum of $\sqrt[3]{6a^4b^2}$ and $\sqrt[3]{162a^4b^2}$, expressed in simplest radical form, is

1) $\sqrt[6]{168a^8b^4}$
2) $2a^2b\sqrt[3]{21a^2b}$
3) $4a\sqrt[3]{6ab^2}$
4) $10a^2b\sqrt[3]{8}$

ex: Find the inverse function, if it exists.

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

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

$$xy - x = 2y$$

$$-x = 2y - xy$$

$$-x = y(2-x)$$

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

$$xy - 2y = x$$

$$y(x-2) = x$$

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

$$y^{-1} =$$