

Algebra 2 Honors: Rational Exponents/Function Operations and Compositions

1. Evaluate.

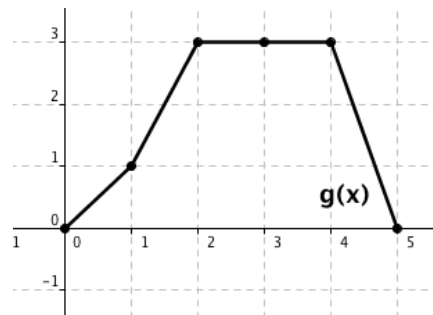
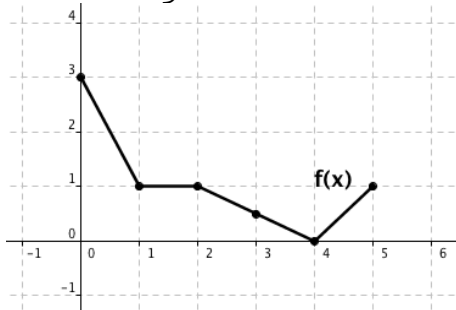
- a) $36^{3/2}$ b) $64^{-2/3}$ c) $-(625^{3/4})$ d) $(-32)^{2/5}$

2. Simplify each radical expression. Use absolute value when necessary.

- a) $\sqrt{96x^2y^5}$
 b) $\sqrt[4]{128x^7y^{10}}$
 c) $\sqrt[3]{-16a^3b^8}$
 d) $\sqrt[6]{448x^7y^8}$
 e) $\sqrt{\sqrt[3]{64x^{12}y^6}}$
 f) $\sqrt[n]{3 \cdot 2^n \cdot x^{2n} \cdot y^{n+3}}$, Let n be an even natural number.

3. What simplifies into $2m|n|\sqrt[4]{5mn^2}$?

4. Use the graphs of f and g to find each value.



- a. $(f + g)(3)$ b. $(f - g)(2)$ c. $(fg)(4)$ d. $\left(\frac{g}{f}\right)(4)$ e. $\left(\frac{f}{g}\right)(2)$

5. Given the following functions, perform the indicated operation and state the domain in interval notation. Do not rationalize the denominator.

$f(x) = 6x^2 - x - 1$	$g(x) = x - 6$	$h(x) = \frac{1}{x}$	$m(x) = 8x^{5/3}$	$r(x) = \sqrt{x}$
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- a) $f(x) + g(x)$ e) $(fg)(x)$
 b) $g(x) - f(x)$ f) $(m+r)(x)$
 c) $h(x) \cdot m(x)$ g) $\frac{g(x)}{r(x)}$
 d) $\left(\frac{m}{f}\right)(x)$

ANSWERS

1.

a) 216

b) $1/16$

c) -125

d) 4

2.

a) $4|x|y^2\sqrt{6y}$

b) $2xy^2\sqrt[4]{8x^3y^2}$

c) $-2ab^2\sqrt[3]{2b^2}$

d) $2x|y|\sqrt[6]{7xy^2}$

e) $2x^2|y|$

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

3. $\sqrt[4]{80m^5n^6}$

4.

a) 3.5

b) -2

c) 0

d) undefined

e) $1/3$

5.

a) $6x^2 - 7; (-\infty, \infty)$

b) $-6x^2 - 2x - 5; (-\infty, \infty)$

c) $8x^{2/3}; (-\infty, 0) \cup (0, \infty)$

d) $\frac{8x^{5/3}}{(2x-1)(3x+1)} ; (-\infty, -1/3) \cup (-1/3, 1/2) \cup (1/2, \infty)$

e) $6x^3 - 37x^2 + 5x + 6; (-\infty, \infty)$

f) $8x^{5/3} + x^{1/2}; [0, \infty)$

g) $\frac{x-6}{\sqrt{x}} ; (0, \infty)$