

evens p. 432

#42	1	
#44	2	
#46	-2	
#48	$3x^2$	$9x^2$
#50	$x-3$	$x-6$

#48 $f(x) = 3x$ $g(x) = x^2$

$g(f(x))$
 $g(3x)$
 $(3x)^2$
 $3x \cdot 3x$
 $9x^2$

$f(g(x))$
 $f(x^2)$
 $3 \cdot x^2$

$$\#50 \quad f(x) = \frac{x-3}{2} \quad g(x) = 2x-3$$

$$g(f(x))$$

$$f(g(x))$$

$$g\left(\frac{x-3}{2}\right)$$

$$f(2x-3)$$

$$2\left(\frac{x-3}{2}\right) - 3$$

$$\frac{2x-3-3}{2}$$

$$\cancel{\frac{2}{1}} \cdot \frac{x-3}{2} - 3$$

$$\frac{2x-6}{2}$$

$$x-3-3$$

$$\cancel{\frac{2(x-3)}{2}}$$

$$x-6$$

$$x-3$$

Topic: properties of exponents

3. multiplication, same base

$$x^2 \cdot x^3 = x^{2+3} = x^5$$

$$3^2 \cdot 3^5 = 3^7$$

1. zero power

$$2^0 = 1$$

$$(-5)^0 = 1$$

$$(-5x^2yz^{14})^0 = 1$$

4. negative power

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

2. division, same base

$$\frac{x^5}{x^2} = x^{5-2} = x^3$$

$$3^{-1} = \frac{1}{3}$$

$$3^{-3} = \frac{1}{3^3} = \frac{1}{27}$$

$$\frac{x^4}{x^5} = x^{4-5} = x^{-1}$$

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

$$\frac{1}{3^{-3}} = 3^3 = 27$$

7. power of a fraction

$$\left(\frac{2}{3}\right)^3 = \frac{2^3}{3^3}$$

$$= \frac{8}{27}$$

5. distributive property, multiplication through a power

$$(3 \cdot x \cdot y)^2 = 3^2 \cdot x^2 \cdot y^2$$

6. power of a power

$$(x^2)^3 = x^{2 \cdot 3} = x^6$$

$$(2x^2y^3z)^4 = 2^4 \cdot x^{2 \cdot 4} \cdot y^{3 \cdot 4} \cdot z^4$$
$$= 16x^8y^{12}z^4$$