

Name: _____

Show work needed to justify your answer.

Date: _____

HW: # 38a: Math IBSL - Standard 37 - Exponents

5 points

1 Write each expression in radical form:

a $7^{\frac{1}{2}}$

b $2^{\frac{3}{5}}$

c $6^{\frac{3}{2}}$

d $2^{\frac{5}{4}}$

e $5^{-\frac{1}{2}}$

f $(3x)^{\frac{3}{2}}$

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

2 Write each expression in exponential form:

a $\sqrt{10}^3$

b $\sqrt[5]{a^6}$

c $\sqrt[3]{m^7}$

d $\frac{1}{\sqrt{5x}}$

e $\frac{1}{\sqrt[4]{(2d)^3}}$

f $3\sqrt{x}$

g $\frac{3}{\sqrt{x}}$

1a) $\sqrt{7}$

b) $(\sqrt[5]{2})^3$ or $\sqrt[5]{2^3}$

c) $(\sqrt{6})^3$ or $\sqrt{6^3}$

d) $(\sqrt[4]{2})^5$ or $\sqrt[4]{2^5}$

e) $\frac{1}{\sqrt{5}}$

f) $(\frac{1}{\sqrt{3x}})^3$

g) $\frac{3}{(\sqrt{x})^3}$

a) $10^{\frac{3}{2}}$

b) $a^{\frac{6}{5}}$

c) $m^{\frac{7}{3}}$

d) $(5x)^{-\frac{1}{2}}$

e) $(2d)^{-\frac{5}{4}}$

f) $3x^{\frac{1}{2}}$

g) $3x^{-\frac{1}{2}}$

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HW: # 38a: Math IBSL - Standard 37 - Exponents

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1 Solve each equation:

a $2^x = 16$

b $10^x = 1\,000\,000$

c $2^{x+1} = 64$

d $3^{2x-1} = 27$

e $3^{1-2x} = 1$

f $3 \times 2^x = 48$

g $4^{x+2} = \frac{1}{64}$

h $\sqrt[4]{3} = 9^x$

i $\left(\frac{1}{5}\right)^x = 25$

j $2^x = 2\sqrt{2}$

2 Convert to the same base and solve each equation:

a $2^{x+3} = 4^{x-2}$

b $5^{x-3} = 25^{x-4}$

c $6^{2x-6} = 36^{3x-5}$

d $9^{5x+2} = \left(\frac{1}{3}\right)^{11-x}$

a) $2^x = 2^4$
 $x = 4$

b) $10^x = 10^6$
 $x = 6$

c) $2^{x+1} = 2^6$
 $x+1 = 6$
 $x = 5$

d) $3^{2x-1} = 3^3$
 $2x-1 = 3$
 $2x = 4$
 $x = 2$

e) $3^{1-2x} = 3^0$
 $1-2x = 0$
 $x = \frac{1}{2}$

f) $2^x = 16$
 $2^x = 2^4$
 $x = 4$

g) $4^{x+2} = 4^{-3}$
 $x+2 = -3$
 $x = -5$

h) $3^{\frac{1}{4}} = 3^{2x}$
 $\frac{1}{4} = 2x$
 $x = \frac{1}{8}$

i) $5^{-x} = 5^2$
 $x = -2$

j) $2^x = 2^{\frac{3}{2}} \cdot 2^{\frac{1}{2}}$
 $2^x = 2^{\frac{3}{2} + \frac{1}{2}}$
 $2^x = 2^2$
 $x = 2$

2a) $2^{x+3} = 2^{2(x-2)}$

$x+3 = 2x-4$

$7 = x$

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

$x-3 = 2x-8$

$5 = x$

c) $6^{2x-6} = 6^{2(3x-5)}$
 $2x-6 = 6x-10$
 $4 = 4x$
 $x = 1$

d) $3^{2(5x+2)} = 3^{x-11}$

$10x+4 = x-11$

$9x = -15$

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