

Review

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MPM - on QUIZ - no calculators

1. Simplify. Your answer should contain only positive exponents.

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

b) $\frac{3x^2y^2}{2x^{-1} \cdot 4yx^2}$

c) $x^4y^3 \cdot (2y^2)^0$

d) $\frac{(2pm^{-1}q^0)^{-4} \cdot 2m^{-1}p^3}{2pq^2}$

2. Solve each equation.

a) $3^{1-2x} = 243$

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

c) $10^{-3x} \cdot 10^x = \frac{1}{10}$

d) $3^{-2x+1} \cdot 3^{-2x-3} = 3^{-x}$

MCR - on QUIZ - no calculators

3. Simplify. Your answer should contain only positive exponents.

a) $(64m^4)^{\frac{3}{2}}$

b) $\left(\frac{16z^4}{25x^8}\right)^{-\frac{1}{2}}$

c) $\frac{3x^{-\frac{1}{2}} \cdot 3x^{\frac{1}{2}}y^{-\frac{1}{3}}}{3y^{-\frac{7}{4}}}$

d) $\left(a^{-1}b^{\frac{1}{3}} \cdot a^{-\frac{4}{3}}b^2\right)^2$

4. Simplify + record in proper form

(a) $\sqrt{75} + \sqrt{48} + \sqrt{27}$

(b) $3\sqrt{2}(2\sqrt{6} + \sqrt{10})$

(c) $\frac{5\sqrt{5}}{2\sqrt{3}}$

(d) $\frac{3}{\sqrt{5}-1}$

(e) $4\sqrt{36x^2y^3z^4}$

(f) $\frac{\sqrt{15xy}}{3\sqrt{10xy^3}}$

(g) $-\sqrt[3]{320} - 4\sqrt[3]{5} + 2\sqrt[3]{135} + 2\sqrt[3]{16}$

(5) Evaluate without a calculator

a) $\sqrt{9}$

b) $27^{1/3}$

c) $32^{-3/5}$

d) $\sqrt[3]{\frac{27}{8}}$

e) $36^{3/2}$

f) $\left(\frac{16}{81}\right)^{-3/4}$

(6) Explain why each of the following pairs is not equal.

(a) $(3x)^{-1} \neq \frac{3}{x}$

(b) $y^3 \cdot y^2 \neq y^6$

(c) $(a^2b^3)^4 \neq a^6b^7$

(d) $(a + b)^2 \neq a^2 + b^2$

(e) $\sqrt{4x^2} \neq 2x$

(f) $\sqrt{2} + \sqrt{3} \neq \sqrt{5}$

7. Simplify + record in proper form

a) $\frac{(2x^2)^{3/2}}{2^{1/2}x^4}$

g) $\frac{x^{4/3}y^{2/3}}{(xy)^{1/3}}$

b) $\frac{x^{-3} \cdot x^{1/2}}{x^{3/2} \cdot x^{-1}}$

h) $\frac{5^{-1/2} \cdot 5x^{5/2}}{(5x)^{3/2}}$

c) $(2x^2y^4)^{3/2}$

i) $(x^{-5}y^3z^{10})^{-3/5}$

d) $\sqrt[5]{y^6}$

j) $(\sqrt[4]{a})^3$

e) $\frac{1}{(\sqrt{t})^5}$

k) $\frac{\sqrt[8]{x^5}}{\sqrt[4]{x^3}}$

f) $\sqrt[4]{\frac{t^{1/2}\sqrt{st}}{s^{2/3}}}$

l) $\sqrt[4]{r^{2n+1}} \times \sqrt[4]{r^{-1}}$

8.

State whether or not the equation is true for all values of the variable.

a) $\sqrt{x^2} = x$

f) $\sqrt{x^2 + 4} = |x| + 2$

b) $\frac{16 + a}{16} = 1 + \frac{a}{16}$

g) $\frac{1}{x^{-1} + y^{-1}} = x + y$

c) $\frac{x}{x + y} = \frac{1}{1 + y}$

h) $\frac{2}{4 + x} = \frac{1}{2} + \frac{2}{x}$

d) $(x^3)^4 = x^7$

e) $6 - 4(x + a) = 6 - 4x - 4a$

9. Solve + check

a) $x - \sqrt{2x+3} = 0$

b) $\sqrt{2x+3} = 1 + \sqrt{x+1}$

10. Solve each equation.

a) $2^x = 1$

(10.) Solve each equation.

a) $2^x \cdot \frac{1}{32} = 32$

b) $\frac{81^{3n+2}}{243^{-n}} = 3^4$

c) $x^{-\frac{3}{2}} = \frac{1}{729}$

d) $26 = -1 + (27x)^{\frac{3}{4}}$

e) $4b^{-\frac{3}{4}} + 10 = \frac{21}{2}$

f) $-5126 = -6 - 5(3x + 22)^{\frac{5}{3}}$

g) $9 + 5\sqrt[3]{2m} = 29$