

General Instructions: If there is any work to show, show it! For decimal answers, feel free to round your answer off to 3 decimal places.

1. Evaluate this expression: $\frac{1 + 3^2 - 2(5 - 3)}{4 - |2 - 4|} = \frac{1 + 9 - 2(2)}{4 - |-2|} = \frac{10 - 4}{4 - 2} = \frac{6}{2} = 3$

2. Write the given algebraic inequality as a number-line graph and using interval notation: $-4 \leq x < 3$



3. For each problem, use the rules of exponents to simplify as much as possible. Use only positive exponents in your answer. Assume that none of the variables are equal to zero.

a) $x^4 x^3 = x^7$

b) $(x^4)^3 = x^{12}$

c) $(5^3 x^{12} y^{-17})^0 = 1$

d) $(x^2 y^{-4} z^5)^{-3}$
 $x^{-6} y^{12} z^{-15}$
 $\frac{y^{12}}{x^6 z^{15}}$

e) $\left(\frac{2x^{-2}y^3}{x^5y^{-3}z}\right)^{-3} = \frac{2^{-3} x^6 y^{-9}}{x^{-15} y^9 z^{-3}}$
 $= 2^{-3} x^{21} y^{-18} z^3 = \frac{x^{21} z^3}{8 y^{18}}$

4. Simplify each of the following. Write your answer with rational exponents (something like $x^{\frac{2}{3}}$).

a) $\sqrt{36x^{10}y^5}$
 $6 \cdot x^{10/2} y^{5/2}$
 $6x^5 y^{5/2}$

b) $\sqrt[3]{9x^2y} \cdot \sqrt[3]{3x^5y^4}$
 $\sqrt[3]{27 \cdot x^7 \cdot y^5} = 3x^{7/3} y^{5/3}$

5. Simplify each of the following:

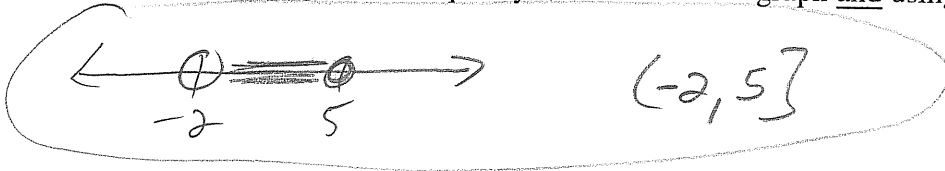
a) $\left(\frac{2}{3}\right)^{-3} = \left(\frac{3}{2}\right)^3$
 $= \frac{27}{8}$ or 3.375
 or $3^{3/2}$

b) $2^{-3} = \frac{1}{8}$ or 0.125
 " $\frac{1}{2^3}$
 c) $0^0 = 0+$ or 29.29

General Instructions: If there is any work to show, show it! For decimal answers, feel free to round your answer off to 3 decimal places.

1. Evaluate this expression: $\frac{1 - 3^2 + 2(3 - 5)}{4 - |2 - 8|} = \frac{1 - 9 + 2(-2)}{4 - |-6|} = \frac{-8 - 4}{4 - 6} = \frac{-12}{-2} = 6$

2. Write the given algebraic inequality as a number-line graph and using interval notation: $-2 < x \leq 5$



3. For each problem, use the rules of exponents to simplify as much as possible. Use only positive exponents in your answer. Assume that none of the variables are equal to zero.

a) $y^8 y^3 = y^{11}$

b) $(y^8)^3 = y^{24}$

c) $(2^3 y^{12} z^{-16})^{-2} = 8^{-2} y^{-24} z^{32} = \frac{32}{2^6 y^{24}} \text{ or } \frac{32}{8^2 y^{24}} \text{ or } \frac{32}{64 y^{24}}$

d) $(x^2 y^{-4} z^5)^0 = 1$

e) $\left(\frac{2w^3 x^{-2}}{w^5 x^{-3} y}\right)^{-4} = \frac{2^{-4} w^{-12} x^8}{w^{-20} x^{12} y^{-4}} = 2^{-4} w^8 x^{-4} y^4 = \frac{w^8 y^4}{16 x^4}$

4. Simplify each of the following. Write your answer with rational exponents (something like $X^{\frac{2}{3}}$).

a) $\sqrt{49w^9 z^8} = 7w^{9/2} z^4$

b) $\sqrt[3]{16w^6 z} \cdot \sqrt[3]{4w^2 z^8} = \sqrt[3]{64w^8 z^9} = 4w^{8/3} z^3$

5. Simplify each of the following:

a) $0^0 = 1$ (with handwritten note "D+ 29:29")

b) $4^{-2} = \frac{1}{4^2} = \frac{1}{16}$
 or 0.0625

c) $\left(\frac{3}{5}\right)^{-2} = \left(\frac{5}{3}\right)^2 = \frac{25}{9}$ or $2\frac{7}{9}$
 or 2.778

General Instructions: If there is any work to show, show it! For decimal answers, feel free to round your answer off to 3 decimal places.

1. Simplify each of the following:

a) $7^{-2} = \frac{1}{49}$ or 0.020

b) $0^0 = \text{undefined}$
at 29:29

c) $(\frac{2}{5})^{-3} = (\frac{5}{2})^3 = \frac{125}{8}$ or $15\frac{5}{8}$ or 15.625

2. For each problem, use the rules of exponents to simplify as much as possible. Use only positive exponents in your answer. Assume that none of the variables are equal to zero.

a) $a^7 a^5 = a^{12}$

b) $(y^7)^5 = y^{35}$

c) $(3^2 a^{11} b^{-12})^{-3} = 3^{-6} a^{-33} b^{36} = \frac{b^{36}}{729 a^{33}}$

d) $(a^5 b^{-3} c^6)^0 = 1$

e) $(\frac{2a^{-3}b^{-7}}{a^5b^{-4}c})^{-4} = \frac{2^{-4} a^{12} b^{28}}{a^{-20} b^{16} c^{-4}} = 2^{-4} a^{32} b^{12} c^4 = \frac{a^{32} b^{12} c^4}{16}$

3. Simplify each of the following. Write your answer with rational exponents (something like $X^{\frac{2}{3}}$).

a) $\sqrt{81a^6b^7} = 9a^{6/2} b^{7/2} = 9a^3 b^{7/2}$

b) $\frac{\sqrt[3]{5a^7c} \cdot \sqrt[3]{25a^2c^4}}{\sqrt[3]{125a^9c^5}} = \frac{5a^{9/3} c^{5/3}}{5a^3 c^{5/3}} = 5a^3 c^{5/3}$

4. Evaluate this expression: $\frac{1+3^2-2(3+4)}{|2-9|+3(2-5)} = \frac{1+9-2(7)}{|-7|+3(-3)} = \frac{10-14}{7-9} = \frac{-4}{-2} = 2$

5. Write the given algebraic inequality as a number-line graph and using interval notation: $-4 < x \leq 7$

