Preview 4 and Recap 4

Saturday, January 14, 2023 7:41 PM

Preview 4

PREVIEW

BEDMAS (Brackets, Exponents, Division, Multiplication, Addition, Subtraction) } order of operations

1. Simplify these expressions:

a) $10+30\div5-3 = 10+6-3$
$= 16-3$
$= 13$

b) $4-2+9\cdot11 = 4-2+99$
$= 2+99$
$= 101$

2. Use exponent laws to simplify these expressions. Give answers with positive exponents only.

a) $6^7\times6^3 = (6\cdot6\cdot6\cdot6\cdot6\cdot6\cdot6)\times(6\cdot6\cdot6)$
$= 6^{10}$ add exponents

b) $8^7\div8^2 = \frac{8\cdot8\cdot8\cdot8\cdot8\cdot8\cdot8}{8\cdot8} = 8^5$ subtract exponents

c) $(3^6)^4 = 3^{6\times4}$
$= 3^{24}$ multiply exponents

d) $6^{-5} = \frac{1}{6^5}$

e) $\frac{(3a^4)^2}{2a^2} = \frac{(3a^4)(3a^4)}{2a^2} = \frac{9a^8}{2a^2} = \frac{9a^6}{2} = \frac{9}{2}a^6$

3. Use exponent laws to simplify these expressions. Write answers as integers or fractions.

a) $12^{-3}\div12^{-5} = \frac{12^{-3}}{12^{-5}} = 12^{-3-(-5)}$ (subtract exponents)
$= 12^{-3+5}$
$= 12^2$
$= 144$

b) $5(-2)^3 = 5(-8)$
$= -40$

c) $-\left(\frac{3}{2}\right)^4 = -\frac{81}{16}$

d) $9^{-7}\times9^7 = 9^{-7+7}$
$= 9^0$
$= 1$

e) $\frac{6^{12}\times6^{-2}}{6^9} = \frac{6^{12+-2}}{6^9}$
$= \frac{6^{10}}{6^9}$
$= 6^{10-9}$
$= 6^1$
$= 6$

f) $3^{-5}\div3^3\times3^6 = 3^{-5-3}\times3^6$
$= 3^{-8}\times3^6$
$= 3^{-8+6}$
$= 3^{-2}$
$= \frac{1}{3^2} = \frac{1}{9}$

Recap 4

Preview 4

PREVIEW BEDMAS

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d) $6^{-5} = \frac{1}{6^5}$

e) $\frac{(3a^4)^2}{2a^2} = \frac{3^2a^8}{2a^2} = \boxed{\frac{9a^6}{2}}$

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$= 12^{-3+5}$
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e) $\frac{6^{12}\times6^{-2}}{6^9}$
$= 6^{12+-2-9}$
$= 6^1$
$= \boxed{6}$

f) $3^{-5}\div3^3\times3^6$
$= 3^{-5-3+6}$
$= 3^{-8+6}$
$= 3^{-2}$
$= \frac{1}{3^2} = \boxed{\frac{1}{9}}$

Recap 4

RECAP

1) Simplify each expression:

a) $\frac{4^{\frac{3}{4}} \cdot 4^{-\frac{1}{4}}}{4^{\frac{5}{12}}}$

b) $\left(5^{\frac{2}{3}} \cdot 36^{\frac{1}{6}}\right)^3$

2) Evaluate each expression for $a = -1$ and $b = 3$:

a) $-\frac{9a^5b^2}{b^{-2}}$

b) $a^{\frac{2}{5}}\left((5b)^2 - a^{\frac{3}{5}}\right)$

3) Without using a calculator, what is $\sqrt{0.25}$?

A. 0.05 **B.** 0.5 **C.** $\frac{25}{100}$ **D.** $\frac{1}{5}$

4) Without using a calculator, what is $-27^{\frac{2}{3}}$?

A. 9 **B.** −9 **C.** 18 **D.** −18

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A. 9 **B.** −9 **C.** 18 **D.** −18

$= \frac{4^{3/4} \cdot 4^{-1/4}}{4^{3/2}} = 4^{3/4 + -1/4 - 6/4} = 4^{-4/4} = 4^{-1} = \frac{1}{4}$

$= 5^{\frac{2}{3} \cdot \frac{3}{1}} \cdot 36^{\frac{1}{6} \cdot \frac{3}{1}} = 5^2 \cdot 36^{1/2} = 25 \cdot 6 = 150$

$= -9a^5b^{2-(-2)} = -9a^5b^4$

Now, evaluate:

$= -9(-1)^5(3)^4 = -9(-1)(81) = 9(81) = 729$

$= a^{2/5}\left(256^2 - a^{3/5}\right) = (-1)^{2/5}\left(25(3)^2 - (-1)^{3/5}\right) = \sqrt[5]{-1}^{\,2}\left(25(9) - \sqrt[5]{-1}^{\,3}\right)$

$= (-1)^2(225 - (-1)^3) = (1)(225 - (-1)) = (1)(226) = 226$

$= \sqrt{\frac{1}{4}} = \frac{1}{2}$

$-27^{2/3} = -\left(\sqrt[3]{27}^{\,2}\right) = -(3^2) = -9$