

Math 60 - Friday, 4/18

Q's on 1.8

Checkpoint #3

New material - 1.8 supplement
(in back of the book)

Monday - Big Boss Test - Chapter 1

2 parts: Part I - ^{- 18 questions} no calculator

Part II - with calculator
(no phones)

10 questions

Q's on 1.8

97

99

85

87

83

103

67

71

79

✓ 45

69

$$45. \quad 6(3-5)^3 - 2(1-3)^3$$

$$= 6(-2)^3 - 2(-2)^3$$

$$= 6(-8) - 2(-8)$$

$$= -48 + 16$$

$$= -32$$

$$67. \quad \frac{\frac{1}{4} - \frac{1 \cdot 2}{2 \cdot 2}}{\frac{1}{3}} \quad \text{LCD} = 4 = \frac{\frac{1}{4} - \frac{2}{4}}{\frac{1}{3}}$$

$$= \frac{-\frac{1}{4}}{\frac{1}{3}}$$

$$= -\frac{1}{4} \div \frac{1}{3}$$

$$= -\frac{1}{4} \cdot \frac{3}{1}$$
$$= -\frac{3}{4}$$

$$\begin{aligned}
 69. \quad & \underline{-\frac{9}{4}\left(\frac{1}{2}\right)} + \underline{\frac{3}{4} \div \frac{5}{6}} \\
 & = -\frac{9}{8} + \frac{3}{4} \cdot \frac{6^3}{5} \\
 & = \frac{-9 \cdot 5}{8 \cdot 5} + \frac{9 \cdot 4}{10 \cdot 4} \\
 & = \frac{-45}{40} + \frac{36}{40} \\
 & = \frac{-9}{40}
 \end{aligned}$$

$$\begin{aligned}
 83. \quad & 3[6 - 1(y+1)] \quad \left. \begin{array}{l} -6(y+1) \\ -6y-6 \end{array} \right\} \\
 & = 3[\underline{6} - y \underline{-1}] \\
 & = 3[5 - y] \\
 & = 15 - 3y
 \end{aligned}$$

$$\begin{aligned}
 86. \quad & 6 - 5[8 - (2y - 4)] \\
 & = 6 - 5[8 - 2y + 4] \\
 & = 6 - 5[\underline{12} - 2y] \\
 & = \underline{6} - \underline{60} + 10y \\
 & = -54 + 10y
 \end{aligned}$$

1.8 Supplement Sup-1

3 exponent rules

① Product Rule (mult)

$$\begin{aligned} X^2 \cdot X^5 &= X \cdot X \cdot \overset{\text{expand your exponents}}{X \cdot X \cdot X \cdot X \cdot X} \\ &= X^7 \end{aligned}$$

~~$X \cdot 2X^2$~~

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

$$X^4 \cdot X^9 = X^{13} \quad \underline{X^4}(\underline{X^9})$$

$$\boxed{X^a \cdot X^b = X^{a+b}}$$

$$3X + 2X^2$$

② Power Rule - power to a power

$$\begin{aligned} \underline{(X^2)^3} &= X^2 \cdot X^2 \cdot X^2 \\ &= X \cdot X \cdot X \cdot X \cdot X \cdot X \\ &= X^6 \end{aligned}$$

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

$$(t^2)^{100} = t^{200}$$

$$\boxed{(X^a)^b = X^{a \cdot b}}$$

Distributing Powers

$$\textcircled{3} \quad (3x)^2 = \underline{3x} \cdot \underline{3x} \quad \left. \begin{array}{l} 3^2 x^2 \\ = 9x^2 \end{array} \right\}$$

$$= 9x^2$$

$$\textcircled{3} \quad (2y)^3 = 2^3 y^3$$

$$= 8y^3$$

$$\textcircled{4} \quad (4t)^4 = 4^4 t^4$$

$$= 256t^4$$

$$\textcircled{2} \quad (3t^2)^2 = 3^2 t^4$$

$$= 9t^4$$

$$\textcircled{3} \quad (4x^3)^3 = 4^3 x^9 \quad 4 \cdot 4 \cdot 4$$

$$= 64x^9$$

$$\textcircled{3} \quad (-2y^6)^3 = (-2)^3 y^{18}$$

$$= -8y^{18}$$

Math Jeopardy

Product Rule	Power Rule	Distributing Powers	Mystery
100 $5^3 \cdot 5^6$	100 $(2^3)^2$	100 $(2a)^3$	100 $x \cdot x^2 - 3x^3$
200 $(-8)^2 \cdot (-8)^3$	200 $((-6)^5)^3$	200 $(-2a)^3$	200 $(-7x^3)(-2x^3)(-x^2)$
300 $x^2 \cdot x^4$	300 $((-2,3)^3)^4$	300 $(3xy^2)^3$	300 $3x^2 - 5x^2$
400 $5a^3 \cdot 3a^6$	400 $(x^4)^9$	400 $(4x^2yz)^3$	400 $2x - 3y^2$
500 $3a^2b^3 \cdot 2ab^2$	500 $(5^4)^5$	500 $(-4x^2yx)^2$	500 $[-3a^5b^2]^4$
600 $(-m)^6(-m)^4$	600 $((-t)^3)^5$	600 $[(3x)(x^2)]^2$	600 $[(2a^3b)(3a^4)]^2$

Math Jeopardy - Answers

Product Rule	Power Rule	Distributing Powers	Mystery
100 $5^3 \cdot 5^6$ $= 5^{18}$	100 $(2^3)^2$ $= 2^6$	100 $(2a)^3 = 2^3 a^3$ $= 8a^3$	100 $x \cdot x^2 - 3x^3$ $= x^3 - 3x^3$ $= -2x^3$
200 $(-8)^2 \cdot (-8)^3$ $= (-8)^5$ $= -8^5$	200 $((-6)^5)^3$ $= (-6)^{15}$ $= -6^{15}$	200 $(-2a)^3$ $= (-2)^3 a^3$ $= -8a^3$	200 $(-7x^3)(-2x^3)(-x^2)$ $= -14x^8$
300 $x^2 \cdot x^4$ $= x^6$	300 $((-2 \cdot 3)^3)^4$ $= (-2 \cdot 3)^{12}$ $= 2 \cdot 3^{12}$	300 $(3xy^2)^3$ $27x^3y^6$	300 $3x^2 - 5x^2$ $= -2x^2$
400 $5a^3 \cdot 3a^6$ $15a^9$	400 $(x^4)^9$ $= x^{36}$	400 $(4x^2yz)^3$ $= 4^3 x^6 y^3 z^3$ $= 64x^6 y^3 z^3$	400 $2x - 3y^2$
500 $3a^2b^3 \cdot 2ab^2$ $= 6a^3b^5$	500 $(5^4)^5$ $= 5^{20}$	500 $(-4x^2yx)^2$ $= (-4x^3y)^2$ $= 16x^6y^2$	500 $[-3a^5b^2]^4$ $= (-3)^4 a^{20} b^8$ $= 81a^{20}b^8$
600 $(-m)^6(-m)^4$ $= (-m)^{10}$ $= m^{10}$	600 $((-t)^3)^5$ $= (-t)^{15}$ $= -t^{15}$	600 $[(3x)(x^2)]^2$ $= (3x^3)^2$ $= 3^2 x^6$ $= 9x^6$	600 $[(2a^3b)(3a^4)]^2$ $= [6a^7b]^2$ $= 6^2 a^{14} b^2$ $= 36a^{14}b^2$

$$\begin{aligned}
 &36a^{14}b^2 \\
 &36a^{14}b^2 \\
 &(6a^7b)^2 \\
 &36a^{14}b^2
 \end{aligned}$$

$$\begin{aligned}
 &= 6^2 a^{14} b^2 \\
 &= 36a^{14}b^2
 \end{aligned}$$

Math 60 Section 1.8 Supplement

USING THE EXPONENT RULES

1. Write your answer as a single power.

a) $5^3 \cdot 5^6$

b) $(-8)^2 \cdot (-8)^3$

c) $(-2)^3(-2)^4$

d) $2^2 \cdot 2^3 \cdot 2$

e) $(-2.1)^5(-2.1)^3$

f) $(-0.2)^3(-0.2)^2$

2. Simplify.

a) $x^4 \cdot x^2$

b) $(-m)^6(-m)^4$

c) $(s^2)^4$

d) $((-r)^3)^3$

3. Simplify.

a) $(2^3)^2$

b) $((-3)^7)^4$

c) $((-5)^2)^3$

d) $((-6)^5)^3$

e) $(4^6)^7$

f) $((-2.3)^3)^4$

g) $(a^2b)^3$

h) $(xy^3)^5$

i) $(abc)^5$

j) $(2x^3)^3$

k) $(a^5b^2)^3$

l) $(3a^5)^2$

m) $(3xy^2)^3$

n) $(5a^8)^3$

o) $(4x^2yx)^3$

4. Simplify, then evaluate.

a) $(-5)^2(-5)^3$

b) $6^2 \cdot 6^5$

c) $(-2)^3(-2)^5(-2)^2$

d) $(-1)^5(-1)^7$

e) $(-3.1)^5(-3.1)^3$

5. Simplify.

a) $(5a^3)(3a^6)$

b) $(4x^2)(-2x^3)$

c) $(3a^2b^3)(2ab^2)$

d) $(2x)(5x^3)$

e) $(5mn)(3m)$

f) $(-4x^3)(-3x^2)$

g) $(3y)(5y)(2y^2)$

h) $(a)(2a^2)(-3a^5)$

i) $(-7x^3)(-2x^3)(-x^2)$

6. Simplify.

a) $(-2a^3)^3$

b) $[(3x)(x^2)]^2$

c) $[(2a^3b)(3a^4)]^2$

d) $(2x^2)^3(2x^5)$

Answers

1. a) 5^9 b) $(-8)^5 = -8^5$ c) $(-2)^7 = -2^7$ d) 2^6 e) $(-2.1)^8 = 2.1^8$
f) $(-0.2)^5 = -0.2^5$

2. a) x^6 b) $(-m)^{10} = m^{10}$ c) s^8 d) $(-r)^9 = -r^9$

3. a) 2^6 b) $(-3)^{28} = 3^{28}$ c) $(-5)^6 = 5^6$ d) $(-6)^{15} = -6^{15}$ e) 4^{42} f) $(-2.3)^{12} = 2.3^{12}$
g) a^6b^3 h) x^5y^{15} i) $a^5b^5c^5$ j) 2^3x^9 k) $a^{15}b^6$ l) 3^2a^{10}
m) $3^3x^3y^6$ n) 5^3a^{24} o) $4^3x^6y^3x^3$

4. a) -3125 b) 279936 c) 1024 d) 1 e) 8528.91

5. a) $15a^9$ b) $-8x^5$ c) $6a^3b^5$ d) $10x^4$ e) $15m^2n$ f) $12x^5$
g) $30y^4$ h) $-6a^8$ i) $-14x^8$

6. a) $-8a^9$ b) $9x^6$ c) $36a^{14}b^2$ d) $16x^{11}$