MATH-125 TEST 5

sample

100 points   NAME:_____

All answers should be simplified completely and have only positive exponents.

FILL IN THE BLANKS WITH THE MOST APPROPRIATE ANSWER. (2 POINTS EACH)

(1) $5^0 =$ ___1___

(8) $\left(\dfrac{3}{4}\right)^{-2} = \left(\dfrac{4}{3}\right)^2 = \dfrac{16}{9}$

(2) $\dfrac{m^4}{m^{11}} = \dfrac{1}{m^7}$

(9) $5^{-2} = \dfrac{1}{5^2} = \dfrac{1}{25}$

(3) $\dfrac{y^6}{y^3} = y^3$

(10) $\left(-4a^2b^8\right)^3 = -64a^6b^{24}$

(4) $(-5)^2 = 25$

(11) $-5^2 = -25$

(5) $9x^{-3} = \dfrac{9}{x^3}$

(12) $\dfrac{p^{-9}}{p^{-3}} = \dfrac{p^3}{p^9} = \dfrac{1}{p^6}$

(6) $(2z^5)(3z^5) = 6z^{10}$

(13) $\dfrac{-7ab^{-4}}{c^{-1}} = \dfrac{-7ac}{b^4}$

(7) $2z^5 + 3z^5 = 5z^5$

(14) $4^{-1} + 10^{-1} = \dfrac{1}{4} + \dfrac{1}{10} = \dfrac{5}{20} + \dfrac{2}{20} = \dfrac{7}{20}$

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(15) Simplify (4 points each)

(a) $\left(7p^{-3}q^7\right)\left(8p^4q^9\right)$

$56pq^{16}$

(b) $\dfrac{12m^8n^{-7}}{18m^{-3}n^{-1}}$

$\dfrac{12\ m^8m^3n^1}{18\ \ \ n^7}$

$\dfrac{2\ m^{11}}{3\ n^6}$

(c) $\left(\dfrac{-3x^3y^{-8}}{z^2}\right)^2$

$\dfrac{9x^6y^{-16}}{z^4}$

$\dfrac{9x^6}{y^{16}z^4}$

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(16) Simplify (3 points each)

(a) $(12x^2 + 3x - 7) - (5x^2 + 4x + 1)$

$12x^2 + 3x - 7 - 5x^2 - 4x - 1$

$7x^2 - x - 8$

(b) $5x^4y^5 - 3x^2y^3 + 7x^4y^5 + 11x^2y^3$

$12x^4y^5 + 8x^2y^3$

(18) DIVIDE: (5 points each)

(a) $\dfrac{16x^8 - 8x^6 + 12x^3}{4x^3}$

$\dfrac{16x^8}{4x^3} - \dfrac{8x^6}{4x^3} + \dfrac{12x^3}{4x^3}$

$4x^5 - 2x^3 + 3$

(b) $(4y^3 - 4y^2 + 5y - 8) \div (2y - 1)$

$$\begin{array}{r} 2y^2 - y + 2 \\ 2y-1{\overline{\smash{\big)}\,4y^3 - 4y^2 + 5y - 8}} \\ \underline{-(4y^3 - 2y^2)} \\ -2y^2 + 5y \\ \underline{-(-2y^2 + y)} \\ 4y - 8 \\ \underline{-(4y - 2)} \\ -6 \end{array}$$

Ans: $2y^2 - y + 2 - \dfrac{6}{2y-1}$

(19) Find the value of the polynomial $7x^2 + 3x - 1$ when   (2 points each)

(a) x = 1

$7 \cdot 1^2 + 3 \cdot 1 - 1$

9

(b) x = -12

$7(-12)^2 + 3(-12) - 1$

$7 \cdot 144 - 36 - 1$

$1008 - 36 - 1$

971

(20) Simplify

a) $\left(-4g^{-2}z^8\right)^3\left(4g^9z^{-1}\right) = $ ~~$\dfrac{256\,z^{23}}{g^5}$~~

$-64g^{-6}z^{24} \cdot 4g^9z^{-1}$

$-256g^{3}z^{23}$

$-256g^{\frac{3}{}}z^{23}$

b) $\left(\dfrac{8x^9y^{-3}}{4x^{-3}y^2}\right)^{-3} = $ make positive—take reciprocal $\dfrac{y^{15}}{8x^{36}}$

$\left(\dfrac{4x^{-3}y^2}{8x^9y^{-3}}\right)^3$ simplify inside first

$\left(\dfrac{y^5}{2x^{12}}\right)^3$

c) $\dfrac{\left(2a^3b^6\right)^2}{\left(2a^5b\right)^6} = $ $\dfrac{b^6}{16a^{24}}$

$\dfrac{4a^6b^{12}}{64a^{30}b^6} = \dfrac{b^6}{16a^{24}}$

d) $\dfrac{\left(3y^3z^2\right)^2\left(4yz^{-3}\right)^{-2}}{\left(y^5z^{-1}\right)^3} = $ make positive $\dfrac{9z^3}{16y^{11}}$

$\dfrac{(3y^3z^2)^2}{(y^5z^{-1})^3(4yz^{-3})^2} = \dfrac{9y^6z^4}{y^{15}z^{-3}16y^2z^{-6}}$

$\dfrac{9y^6z^4z^3z^6}{16y^{15}y^2} = \dfrac{9z^{13}}{16y^{11}}$

(17) Multiply (4 points each)

(a) (3x - 5)(3x +5)

$$9x^2 - 25$$

(b) $(6x-3)\left(\dfrac{2}{3}x + 5\right)$

$$6 \cdot \frac{2}{3}x^2 + 30x - 3 \cdot \frac{2}{3}x - 15$$

$$4x^2 + 28x - 15$$

(c) (4x-3)²

$$16x^2 - 24x + 9$$

(d) (x + 4) (3x² + 2x - 5)

$$3x^3 + 2x^2 - 5x$$
$$12x^2 + 8x - 20$$
$$\overline{3x^3 + 14x^2 + 3x - 20}$$

(e) x(2x+4)(x+3)

$$x(2x^2 + 10x + 12)$$

$$2x^3 + 10x^2 + 12x$$

(f) (4a-7)(3a+1)

$$12a^2 - 17a - 7$$