MATH 1200 COLLEGE ALGEBRA FALL 2019 NAME: _____

EXAM-1

Show all your work to get full/partial credit. Simplify your answers as much as possible. Each problem is worth 5 points.

#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
Score																					

1) Simplify: $17 - \left(11 + \left||3-7| - 8\right|\right) \div \sqrt{25}$

$= 17 - (11 + |4 - 8|) \div 5$ 1

$= 17 - (11 + 4) \div 5$ 2

$= 17 - 3 = 14$ 2

2) Write the interval notation and set-builder notation for this graph:

$(-7, \infty)$; 2

$\{x | x > -7\}$ 3

3) Simplify:

$\frac{1}{3}x^3y - \frac{5}{2}yx^3 + \frac{2}{3}y^3x$

$= \frac{1}{3}x^3y - \frac{5}{2}x^3y + \frac{2}{3}y^3x$ 1

$= \left(\frac{1}{3} - \frac{5}{2}\right)x^3y + \frac{2}{3}y^3x$ 2

$= \frac{-13}{6}x^3y + \frac{2}{3}y^3x$ 2

4) Simplify:

$-(8x - z) - 2(8x - 2z) - 2x$

$= -8x + z - 16x + 4z - 2x$ 2

$= -26x + 5z$ 3

5) Simplify the expression and leave your answer in positive exponents:

$\left(\frac{(z^{-3})^{-4}z^{-2}}{z^{-6}}\right)^{-1}$

$= \left(\frac{z^{12}z^{-2}}{z^{-6}}\right)^{-1}$ 2

$= \left(\frac{z^{10}}{z^{-6}}\right)^{-1}$ 1

$= (z^{16})^{-1}$ 1

$= \frac{1}{z^{16}}$ 1

6) Simplify the expression and leave your answer in positive exponents:

$\frac{10x^3y^{11}z^0}{25x^7y^3}$

$= \frac{10x^3y^{11}}{25x^7y^3}$ 2

$= \frac{2y^8}{5x^4}$ 3

7) Evaluate:

$\left(\frac{25}{49}\right)^{-\frac{1}{2}}$

$= \left(\frac{49}{25}\right)^{\frac{1}{2}}$ 2

$= \frac{7}{5}$ 3

8) Simplify the expression, assume that all variables are positive:

$\frac{\sqrt[3]{2x^2y^7}}{\sqrt[3]{16x^{14}y^4}}$

$= \sqrt[3]{\frac{y^3}{8x^{12}}}$ 3

$= \frac{y}{2x^4}$ 2

9) For the following polynomial, determine

(a) the leading coefficient: _____

(b) the degree of the polynomial: _____

$12x^5 + 5.6x^3 - 1.2x^7$

Leading coefficient is the coefficient of the leading term: -1.2 2

The degree of polynomial is the degree of the leading term: 7 3

10) Multiply and simplify:

$(7x^2 - 2x)(5x + 1)$

$= 7x^2(5x + 1) - 2x(5x + 1)$ 2

$= 35x^3 + 7x^2 - 10x^2 - 2x$ 2

$= 35x^3 - 3x^2 - 2x$ 1

11) Expand and simplify: $(3x - 2y)^2$

$= (3x)^2 - 2 \cdot (3x)(2y) + (2y)^2$ 3

$= 9x^2 - 12xy + 4y^2$ 2

For #12-14, factor completely.

12) $-6x^2 + 3x + 3$

$= -3(2x^2 - x - 1)$ 1

$= -3(2x^2 - 2x + x - 1)$ 2

$= -3[2x(x-1) + (x-1)]$ 1

$= -3(x-1)(2x+1)$ 1

13) $x^3 + 27$

$= x^3 + 3^3$ 2

$= (x+3)(x^2 - 3x + 3^2)$ 2

$= (x+3)(x^2 - 3x + 9)$ 1

14) $x^3 + 5x^2 - 4x - 20$

$= x^2(x+5) - 4(x+5)$ 2

$= (x+5)(x^2 - 4)$ 1

$= (x+5)(x^2 - 2^2)$ 1

$= (x+5)(x+2)(x-2)$ 1

15) Add and simplify: $\frac{2}{x-3} + \frac{5}{x+1}$

$= \frac{2(x+1)+5(x-3)}{(x-3)(x+1)}$ 2

$= \frac{2x+2+5x-15}{(x-3)(x+1)}$ 2

$= \frac{7x-13}{(x-3)(x+1)}$ 1

16) For $\left(\frac{x}{x-3}\right)\left(\frac{2x-6}{5x+1}\right)$,

(a) Identify restricted values

$(x-3)(5x+1) \neq 0$ 1

$x \neq 3, x \neq -\frac{1}{5}$ 2

(b) Simplify

$= \frac{x}{(x-3)} \cdot \frac{2(x-3)}{(5x+1)}$ 1

$= \frac{2x}{5x+1}$ 1

17) Simplify: $\dfrac{\frac{1}{2}-\frac{1}{4x}}{\frac{1}{8x}}$

$= \dfrac{\frac{2x-1}{4x}}{\frac{1}{8x}}$ 2

$= \frac{(2x-1)}{4x} \cdot 8x$ 2

$= 2(2x-1)$ 1

For #18-20, solve for x:

18) $3(x-2)-2(x+1)=0$

$3x-6-2x-2=0$ 2

$x-8=0$ 2

$x=8$ 1

19) $\dfrac{5}{2x}=\dfrac{1}{x}-\dfrac{1}{2}$

$\frac{5}{2x} \cdot 2x = \frac{1}{x} \cdot 2x - \frac{1}{2} \cdot 2x$ 2

$5=2-x$ 1

$x=2-5$ 1

$x=-3$ 1

20) $6xy-3y=9$

$6xy=9+3y$ 2

$\dfrac{6xy}{6y}=\dfrac{9+3y}{6y}$ 2

$x=\dfrac{9+3y}{6y}$ 1