

Math 135 Practice Exam
Part 1- No Calculator

Simplify:

$$1. \quad -\frac{3}{8} + \frac{5}{12}$$

$$= \frac{-9}{24} + \frac{10}{24}$$

$$= \frac{1}{24}$$

$$2. \quad -2.4(-4.38 + 7.1)$$

$$= -2.4(2.72)$$

$$= -6.528$$

$$3. \quad -2\frac{4}{25} \times \frac{-15}{-27}$$

$$= \frac{-54}{25} \times \frac{15}{27} \text{ (cancel)}$$

$$= \frac{-2}{5} \times \frac{3}{1}$$

$$= \frac{-6}{5}$$

$$4. \quad -5^2 + (-3)^3 + 7^0$$

$$= -25 - 27 + 1$$

$$= -51$$

$$5. \quad (5-8)^2 \div 3 \times 3$$

$$= (-3)^2 \div 3 \times 3$$

$$= 9 \div 3 \times 3 \text{ (div and mult in order left to right)}$$

$$= 3 \times 3$$

$$= 9$$

$$6. \quad \sqrt[3]{-64} = -4$$

$$7. \quad 9^{\frac{-1}{2}} = \left(\frac{1}{9}\right)^{\frac{1}{2}}$$

$$= \sqrt{\frac{1}{9}}$$

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

$$8. \quad \left(\frac{27}{8}\right)^{\frac{2}{3}} = \left(\sqrt[3]{\frac{27}{8}}\right)^2$$

$$= \left(\frac{3}{2}\right)^2$$

$$= \frac{9}{4}$$

$$9. \quad 0.002 \times 2500000 = 2.0 \times 10^{-3} \times 2.5 \times 10^6$$

$$= 5.0 \times 10^3$$

$$10. \quad 3x-7$$

$$11. \quad 8 - [3a - 6(5 + 4a)]$$

$$= 8 - [3a - 30 - 24a]$$

$$= 8 - [-21a - 30]$$

$$= 8 + 21a + 30$$

$$= 38 + 21a$$

$$12. \quad x^2 - 3xy = (6)^2 - 3(6)(-2)$$

$$= 36 + 36$$

$$= 72$$

$$\frac{1}{2}xy^2 - 8xy + \frac{2}{3}xy^2 + \frac{1}{4}yx - 5x^2y$$

$$13. = \frac{3}{6}xy^2 + \frac{4}{6}xy^2 - \frac{32}{4}xy + \frac{1}{4}yx - 5x^2y$$

$$= \frac{7}{6}xy^2 - \frac{31}{4}xy - 5x^2y$$

14. Simplify:

$$a) (3y-4) - (6y+5) = 3y-4-6y-5$$

$$= -3y-9$$

$$b) (3y-4)(6y+5)$$

$$= 18y^2 + 15y - 24y - 20$$

$$= 18y^2 - 9y - 20$$

$$(x+6)^2 = (x+6)(x+6)$$

$$15. \text{ YES } = x^2 + 6x + 6x + 36$$

$$= x^2 + 12x + 36$$

$$16. \text{ D: } \{9, 4, -2, 8\} \text{ R: } \{3, 4, 6\} \text{ Yes, it's a function}$$

Part 2- Calculators allowed (Sharp EL531 or TI BAII Plus)

1. 0.635

2. 175.72

$$3.a) \frac{-16a^{-5}b^{-2}}{-2a^3b}$$

$$= 8a^{-5-3}b^{-2-1}$$

$$= 8a^{-8}b^{-3}$$

$$= \frac{8}{a^8b^3}$$

$$b) \frac{(5x^7y^3)^{-2}}{5^{-2}x^{-14}y^{-6}}$$

$$= \frac{1}{25x^{14}y^6}$$

$$4. = \frac{18cd + 21d^2}{3d} + \frac{21d^2}{3d}$$

$$= 6c + 7d$$

$$5. \text{ Divide } \begin{array}{r} x^3 + 7x^2 + 21x + 62 \\ x-3 \overline{) x^4 + 4x^3 + 0x^2 - x + 2} \\ \underline{x^4 - 3x^3} \\ 7x^3 + 0x^2 \\ \underline{7x^3 - 21x^2} \\ 21x^2 - x \\ \underline{21x^2 - 63x} \\ 62x + 2 \\ \underline{62x - 186} \\ 188 \end{array}$$

$$\text{Ans: } x^3 + 7x^2 + 21x + 62 + \frac{188}{x-3}$$

6. $9(5)-4 = 41$ $7(5)+6 = 41$ Yes. $x=5$ is a solution.

7. a) $6x-9=33$
 $6x=42$
 $x=7$

b) $5(x-2)=12-4(x+3)$
 $5x-10=12-4x-12$
 $5x-10=-4x$
 $5x+4x=10$
 $9x=10$
 $x=\frac{10}{9}$

$\frac{3}{4}x = \frac{3}{1} - \frac{1}{3}x$ (clear fractions)

$\frac{(12)3}{4}x = \frac{(12)3}{1} - \frac{(12)1}{3}x$

$9x = 36 - 4x$

c) $9x+4x=36$

$13x=36$

$x = \frac{36}{13}$

$0.5a+0.8=2.3$ (clear decimals)

$(10)0.5a+(10)0.8=(10)2.3$

d) $5a+8=23$

$5a=31$

$a = \frac{31}{5}$

8. $n \geq 60$

9. a) $-5x < 35$
 $x > -7$

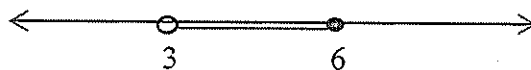


$2x \geq 4x-12$ or $3x-5 > 4$

$-2x \geq -12$ $3x > 9$

b) $x \leq 6$ or $x > 3$

Soln: $3 < x \leq 6$



$x+2y=8$

10. a) $2y=8-x$

$y = \frac{8-x}{2}$

$C = \frac{b-y}{a}$

b) $Ca = b-y$

$Ca - b = -y$

$y = -Ca + b$

11. $C=29.95+0.45k$

$f(-5) = (-5)^2 - 3(-5) + 7$

12. $= 25 + 15 + 7$

$= 47$

$y = 2(x-4) + 19$

13. $y = 2x - 8 + 19$

$m=2$, y -int. $=11$ or $(0,11)$

$y = 2x + 11$

$$14. \quad m = \frac{-8-6}{12-(-5)} \\ = \frac{-14}{17}$$

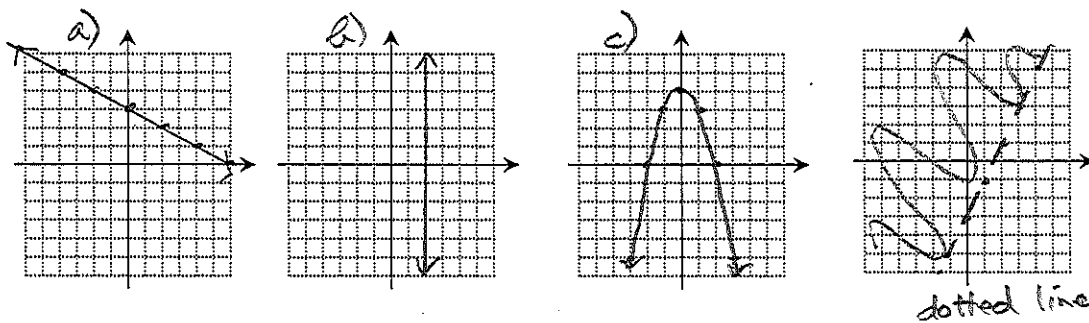
15. Graph

a) $y = -\frac{1}{2}x + 3$

b) $b = 3, m = -\frac{1}{2}$

b) $x - 2 = 0$
 $x = 2$

c) $y = -x^2 + 4$



dotted line

x	y
-2	0
-1	3
0	4
1	3
2	0

d)

$$\begin{aligned} -2y &< -4x + 6 \\ \frac{-2y}{-2} &< \frac{-4x}{-2} + \frac{6}{-2} \\ y &> 2x - 3 \\ T.P. &(0,0) \\ 0 &> 2(0) - 3 \\ 0 &> -3 \text{ True, shade the region that includes the test point.} \end{aligned}$$

$$y = mx + b$$

$$-3 = 5(7) + b$$

16. $-3 = 35 + b$

$$-38 = b$$

$$y = 5x - 38$$

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

$$m = \frac{2}{3} \quad m(\text{perpendicular}) = -\frac{3}{2}$$

$$y = mx + b$$

17. $6 = \frac{-3}{2}(-4) + b$

$$6 = 6 + b$$

$$b = 0$$

$$y = \frac{-3}{2}x$$

$$-3x + 4y = 12$$

$$4y = 3x + 12$$

18. $y = \frac{3}{4}x + 3$ and

$$y = \frac{3}{4}x + 5$$

Lines are parallel as slopes are equal.

$$m = \frac{3}{4}$$

$$m = \frac{3}{4}$$

19.

$$1. x+2y=16 \rightarrow x=-2y+16$$

$$2. 3x-4y=-62$$

sub 1 into 2

$$3(-2y+16)-4y=-62$$

$$-6y+48-4y=-62$$

$$-10y=-110$$

$$y=11$$

sub $y=11$ into 1.

$$x=-2(11)+16$$

$$x=-6$$

Sol'n: $(-6,11)$

20. Let x rep the number of small cookies, let y rep the number of large cookies

$$1. x+y=13$$

$$2. 1.50x+2.50y=24.50$$

$$2. \times 100 \rightarrow 150x+250y=2450$$

$$1. \times (-150) \rightarrow -150x-150y=-1950$$

$$100y=500$$

$$y=5$$

sub $y=5$ into 1. $x+5=13$

$$x=8$$

8 small cookies and 5 large cookies were bought.

21. Let l rep the length, w rep the width

$$1. l=2w+3$$

$$2. P=2w+2l$$

sub 1. into 2.

$$48=2w+2(2w+3)$$

$$48=2w+4w+6$$

$$42=6w$$

$$w=7$$

sub $w=7$ into 1.

$$l=2(7)+3$$

$$l=17$$

The dimensions are 7m by 17m.

