Chapter 7 Practice Test

PreCalculus | FORM NON CALCULATOR

Name _____

Date _____

Period _____

Grade _____

1. Solve the system by substitution. Show your work.

$2 - y = 10$
$3x + 2y = 1$ $\longrightarrow$ $2 - 10 = y$

$-8 = y$

$3x + 2(-8) = 1$

$3x - 16 = 1$

$+16 \quad +16$

$\frac{3x}{3} = \frac{17}{3}$

$x = \frac{17}{3}$

$\boxed{\left(\frac{17}{3}, -8\right)}$

2. Solve the system by elimination. Show your work.

$2x + 3y = 5$
$2(-x + 5y = 21)$

$-2x + 10y = 42$

$\frac{13y}{13} = \frac{47}{13}$

$y = \frac{47}{13}$ yikes!

$2x + 3\left(\frac{47}{13}\right) = 5$

$2x + \frac{141}{13} = 5$

$-\frac{141}{13} \quad -\frac{(14)}{13}$

$\frac{2x}{2} = \frac{-76}{13/2}$

$x = \frac{-38}{13}$

$\boxed{\left(\frac{-38}{13}, \frac{47}{13}\right)}$

3. Find the points of intersection of the graphs of $y = 3x$ and $y = x^3 - 6x$ by substitution.

Since $y = y$

$3x = x^3 - 6x$

$-3x \quad -3x$

$0 = x^3 - 9x$

$0 = x(x^2 - 9)$

$0 = x(x+3)(x-3)$

$x = 0 \quad x = -3 \quad x = 3$

$\boxed{(0,0)\ (-3,-9)\ (3,9)}$

4. Solve the system of equations by algebraic methods.

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

$x + 2y - z = -2$

$2x - y + z = 1$

$3x + y = -1$

$4x - 2y + 2z = 2$

$x + y - 2z = 3$

$5x - y = 5$

$3x + y = -1$

$5x - y = 5$

$\frac{8x}{8} = \frac{4}{8}$

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

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

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

$-\frac{3}{2} \quad -\frac{3}{2}$

$y = \frac{-5}{2}$

$\frac{1}{2} + 2\left(\frac{-5}{2}\right) - z = -2$

$-\frac{9}{2} - z = -2$

$+\frac{9}{2} \quad +\frac{9}{2}$

$-z = \frac{5}{2}$

$z = -\frac{5}{2}$

$\boxed{\left(\frac{1}{2}, -\frac{5}{2}, -\frac{5}{2}\right)}$

Chapter 7 Practice Test

PreCalculus | FORM OKAY CALCULATOR

Name _____

Date _____

Period _____

Grade _____

1. You are selling frozen yogurt and you make \$565 and use 250 cones. A single-scoop cone costs \$2 and a double-scoop cone costs \$2.50. How many of each type of cone did you sell?

Please define your variables and write the system of equations you set up to solve.

x = # of single scoop
y = # of double scoop

$(x+y=250)(-2)$
$2x+2.5y=565$
$-2x-2y=-500$

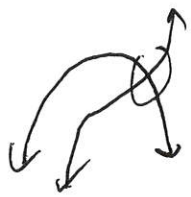
$0.5y=65$

$y=130 \quad x=120$

$\boxed{\text{120 single scoop and 130 double scoop cones were sold.}}$ ~~should be~~

2. Solve the system graphically using the intersect feature of your calculator.

$y=\frac{1}{2}x^3+5x-1.5$
$y=-0.5x^2+3$



$\boxed{(.789, 2.689)}$

3. Solve the system of equations by using matrix operations.

$2x-y+z+w=-3$
$x+2y-3z+w=12$
$3x-y-z+2w=3$
$-2x+3y+z-3w=-3$

~~1650/231~~

$\boxed{\cancel{(3.711, -0.158, 5.763, -1.658)}}$

$(3, -1, 2, -2)$
w, x, y, z

Find the partial fraction decomposition of the following 3 rational functions.

4. $\dfrac{5x-1}{x^2-2x-15} = \dfrac{A}{x-5} + \dfrac{B}{x+3}$ $(x-5)(x+3)$

$(x-5)(x+3)$

$= A(x+3) + B(x-5)$

$= Ax + 3A + Bx - 5B$

$5x-1 = Ax + Bx + 3A - 5B$

$= (A+B)x + (3A-5B)$

$(A+B=5)5$

$3A - 5B = -1$

$5A + 5B = 25$

$8A = 24$

$A = 3$

$B = 2$

$$\boxed{= \frac{3}{x-5} + \frac{2}{x+3}}$$

5. $\dfrac{-x^2+2x+4}{x^3-4x^2+4x} = \dfrac{A}{x} + \dfrac{B}{x-2} + \dfrac{C}{(x-2)^2}$ $x(x-2)^2$

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

$x(x-2)(x-2)$

$x(x-2)^2$

$= A(x-2)^2 + Bx(x-2) + Cx$

$= A(x^2-4x+4) + Bx^2 - 2Bx + Cx$

$= \cancel{Ax^2} - \cancel{4Ax} + 4A + \cancel{Bx^2} - \cancel{2Bx} + \cancel{Cx}$

$= Ax^2 + Bx^2 - 4Ax - 2Bx + Cx + 4A$

$-x^2 + 2x + 4 = (A+B)x^2 + (-4A-2B+C)x + 4A$

$A + B = -1$

$B = -2$

$-4A - 2B + C = 2$

$-4(1) - 2(-2) + C = 2$

$C = 2$

$4A = 4$

$A = 1$

$$\boxed{= \frac{1}{x} + \frac{-2}{x-2} + \frac{2}{(x-2)^2}}$$

6. $\dfrac{x^2+4x+1}{(x^3-x^2)+(x-1)} = \dfrac{A}{x-1} + \dfrac{Bx+C}{x^2+1}$ $(x-1)(x^2+1)$

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

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

$x^2+4x+1 = A(x^2+1) + (Bx+C)(x-1)$

$= \cancel{Ax^2} + A + \cancel{Bx^2} - \cancel{Bx} + \cancel{Cx} - C$

$= Ax^2 + Bx^2 - Bx + Cx + A - C$

$x^2+4x+1 = (A+B)x^2 + (-B+C)x + (A-C)$

$A + B = 1$

$A = 1 - B$

$A = 3$

$-B + C = 4$

$-(-C) + C = 4$

$2C = 4$

$C = 2$

$A - C = 1$

$1 - B - C = 1$

$-1 \qquad -1$

$-B - C = 0$

$+B \qquad +B$

$-C = B$

$B = -2$

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