Name _____ Your score _____ Percent _____%

Chapter 5 Pre-Test
Advanced Math

Possible points _____ Grade ____

Show *all* steps on *all* problems.

Solve each equation. Show all steps! All answers should be expressed as a whole number, a decimal, a proper fraction or a mixed number in simplest form.

1) $\frac{7}{10}+\frac{4}{5}|n|+\frac{1}{2}=2+\frac{9}{20}|n|$

LCM: 20

$20\cdot\frac{7}{10}+\frac{4}{5}|n|+\frac{1}{2}=\frac{2}{1}+\frac{9}{20}|n|\ (r-1)$

$14+16|n|+10=40+9|n|$

$24+16|n|=40+9|n|$

$-16|n| \quad -16|n|$

$24=40+7|n|$

$-40 \quad -40$

$-16=7|n|$

$\frac{-16}{7}=\frac{7|n|}{7}$

$|n|=\frac{16}{7}$

Solution set

$n=\frac{16}{7}$ or $\frac{-16}{7}$

$\left\{\frac{-16}{7},\frac{16}{7}\right\}$

Combine like terms

Solve for r

2) $S=\frac{(rL-a)}{(r-1)}\cdot(r-1)$

get r by itself

$Sr-1S=rL-a$

$+a \quad +a$

$Sr-1S+a=rL$

$-Sr \quad -Sr$

$-1S+a=rL-Sr$

$(-1S+a)=r(L-S)$

$(L-S) \quad (L-S)$

$\frac{(-1S+a)}{(L-S)}=r$

Solve and graph.

3) $\frac{2}{3}(6x-9)+4>5x+1$

$4x-6+4>5x+1$

$4x-2>5x+1$

$+2 \quad +2$

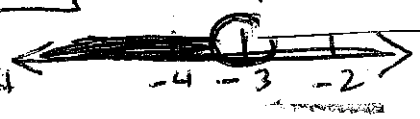
$4x>5x+3$

$-5x \quad -5x$

$\frac{-1x}{-1}>\frac{3}{-1}$ switch direction ineq

$x<-3$

open circle/shade left



Solve for x. Give restrictions on variable

4) $\frac{8x+7}{8x-8}=\frac{4x+3}{4x-2}$

set each denominator $\neq 0$

$8x-8\neq 0$

$\frac{8x}{8}\neq\frac{8}{8}$

$x\neq 1$

$4x-2\neq 0$

$+2 \quad +2$

$\frac{4x}{4}\neq\frac{2}{4}$

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

$(8x+7)(4x-2)=(4x+3)(8x-8)$

$32x^2-16x+28x-14=32x^2-32x+24x-24$

$12x-14=-8x-24$

$+8x \quad +8x$

$20x-14=-24$

$+14 \quad +14$

$\frac{20x}{20}=\frac{-10}{20}$

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

$x\neq 1$

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

Restrictions

Solve each equation by clearing the decimal or by clearing the fraction. Express the solution to number 6 as a fraction in lowest terms or a mixed number in lowest terms. Express the solution to number 5 as a decimal rounded to the nearest thousandth.

5) decimal

$100 * (0.16a + 1.1 = .2a + .95)$

$16a + 110 = 20a + 95$

$-16a \quad -16a$

$110 = 4a + 95$

$-95 \quad -95$

$\frac{15}{4} = \frac{4a}{4}$

$\frac{15}{4} = a$

$3.750 = x$

6) Fraction

$\frac{2}{3}(x-1) - \frac{1}{6}(2x+3) = \frac{1}{8}$

Clear the denominators. LCM: 24

$\frac{2}{3}x - \frac{2}{3} - \frac{1}{3}x + \frac{1}{2} = \frac{1}{8}$

$16x - 16 - 8x + 12 = 3$

$8x - 4 = 3$

$+4 \quad +4$

$\frac{8x}{8} = \frac{7}{8}$

$x = \frac{7}{8}$

Solve each quadratic equation by factoring.

7) $12x^2 - 63 = -24x$

$ax^2 \pm bx \pm c$

$12x^2 + 24x - 63 = 0$

$3(4x^2 + 8x - 21) = 0$

-84	
1	84
2	42
4	21
$+14$	-6

$3 \cdot (4x^2 - 6x + 14x - 21)$

$3 \cdot (4x^2 - 6x) + (14x - 21)$

$3 \cdot 2x(2x - 3) + 7(2x - 3)$

$3 \cdot (2x+7)(2x-3)$

Solve the quadratic equation by using the quadratic formula. Show all steps!

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

8) $8x^2 + 2x - 3 = 0$

$a \quad b \quad c$

Final answers: $x = -\frac{1}{2}$ or $x = \frac{-3}{4}$

$x = \frac{-b \pm \sqrt{b^2 - 4 \cdot ac}}{2a} = \frac{-2 \pm \sqrt{2^2 - (4 \cdot 8 \cdot -3)}}{2 \cdot 8} =$

$\frac{-2 \pm \sqrt{4 + 96}}{16} = \frac{-2 \pm 10}{16}$

(II) $\frac{-2 - 10}{16} = \frac{-12}{16} = \frac{-3}{4}$

(I) $\frac{-2 + 10}{16} = \frac{-8}{16} = -\frac{1}{2}$

Squared part = #

Solve the quadratic equation by completing the square. Round to thousandths.

9) $y^2 - 2y - 5 = 0$

$+5 \quad +5$

move the "loose term"

$\frac{1}{1}y^2 - \frac{2}{1}y = \frac{5}{1}$ "divide by whatever is named by the squared term.)

$y^2 - 2y = 5$

$(-2)^2 = 4$

now take $\frac{1}{2}$ of the coefficient of the x-term + square it

add to both sides! $y^2 - 2y + 4 = 5 + 4$

$(y-2)^2 = 9$ → Change to "squared Form"

$\sqrt{\quad}$ Sq. root both sides

$y - 2 = \pm 3$

(I) $y = 2 + 3$ or (II) $y = 2 - 3$

~~Final~~

$y = 5$ or $y = -1$

Extended response

10) Sherry and Denise together can mow a yard in 20 minutes. Alone, Denise can mow the yard in 30 minutes. How long would Sherry need to mow the yard by herself?

Make a chart below and write the equation you need to solve based on your chart. Explain how you figured out your answer.

Worker	Quantity	Rate	Time
Sherry	1	$\frac{1}{t}$	t
Denise	1	$\frac{1}{30}$	30
Together	1	$\frac{1}{20}$	20

LCM = 60

$60t \cdot \frac{1}{t} + \frac{1}{30} = \frac{1}{20} \cdot 60t$

$60 + 2t = 3t$

$-2t \quad -2t$

$60 = t$ min

It would take Sherry 60 minutes to complete the job by herself.