Test 2
Dusty Wilson
Math 098

$\overline{x}$ = 74.4%

median = 76%

69.8%

69%

Name: _key_

Television is something the Russians invented to destroy American education.

Paul Erdös (1913 - 1996)
Hungarian mathematician

No work = no credit
No Symbolic Calculators

Warm-ups (1 pt each): $\dfrac{4}{0}$ = _undefined_ $\dfrac{0}{4}$ = _0_ 4^0 = _1_

1.) (1 pt) According to Erdös (see above), what was the intent behind the invention of the TV?

Erdös joked that it was designed to destroy American education

2.) (4 pts) Simplify $\dfrac{w^2-25}{w^2}\cdot\dfrac{w^2-5w}{w^2-w-20}$

$= \dfrac{(w+5)(w-5)\,w\,(w-5)}{w^2\,(w-5)(w+4)}$

Result: $\dfrac{(w+5)(w-5)}{w(w+4)}$

3.) (4 pts) Simplify $\dfrac{6x-42}{x^3-16x}\div\dfrac{x^2-3x-28}{x^3-4x^2}$

$= \dfrac{6(x-7)\,x^2(x-4)}{x(x^2-16)(x-7)(x+4)}$

$= \dfrac{6(x-4)}{(x+4)(x-4)(x+4)}$

Result: $\dfrac{6x}{(x+4)^2}$

4.) (4 pts) Write the simplified form of $h(x)=\dfrac{x^2-3x-4}{x^2+9x+8}=\dfrac{(x-4)(x+1)}{(x+1)(x+8)}$. Be sure to list all restrictions on the domain.

$h(x)=\dfrac{x-4}{x+8}$, $x\neq -8, -1$.

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50

5.) (4 pts) Determine the vertical asymptote(s) of $q(x) = \dfrac{x^3 - 3x^2}{x^2 + 8x + 16} = \dfrac{x^2(x-3)}{(x+4)^2}$

Result: $\underline{\quad x = -4 \quad}$

6.) (4 pts) Simplify $\dfrac{5x}{x^2 - 6x + 8} - \dfrac{3x}{x^2 - x - 12}$

$= \dfrac{5x}{(x-4)(x-2)} - \dfrac{3x}{(x-4)(x+3)}$

$= \dfrac{5x(x+3) - 3x(x-2)}{(x-4)(x-2)(x+3)}$

$= \dfrac{5x^2 + 15x - 3x^2 + 6x}{(x-4)(x-2)(x+3)}$

Values: $\dfrac{2x^2 + 21x}{(x-4)(x-2)(x+3)}$

7.) (4 pts) Simplify $\dfrac{a+3}{a-5} + \dfrac{a-2}{a+3}$

$= \dfrac{(a+3)^2 + (a-2)(a-5)}{(a-5)(a+3)}$

$= \dfrac{a^2 + 6a + 9 + a^2 - 7a + 10}{(a-5)(a+3)}$

Result: $\dfrac{2a^2 - a + 19}{(a-5)(a+3)}$

8.) (4 pts) Simplify $\dfrac{a^2}{a-b}+\dfrac{b^2}{b-a}$

$= \dfrac{a^2 - b^2}{a-b}$

$\dfrac{2}{4}$ is $b-a = -(a-b)$

$= \dfrac{(a+b)(a-b)}{a-b}$

Result: $\underline{\quad a+b \quad}$

9.) (4 pts) Simplify $\dfrac{\frac{x^2-x-12}{x^2-2x-15}}{\frac{x^2+8x+12}{x^2-5x-14}}$

$= \dfrac{(x-4)(x+3)}{(x-5)(x+3)} \cdot \dfrac{(x-7)(x+2)}{(x+6)(x+2)}$

Result: $\underline{\dfrac{(x-4)(x-7)}{(x-5)(x+6)}}$

10.) (4 pts) Simplify $\dfrac{\frac{r}{r+3}+\frac{4}{5r}}{\frac{r}{2r+6}+\frac{3}{r}}$

$\cdot \dfrac{10r(r+3)}{10r(r+3)}$

$= \dfrac{10r^2 + 8(r+3)}{5r^2 + 30(r+3)}$

$= \dfrac{10r^2 + 8r + 24}{5r^2 + 30r + 90}$

$= \dfrac{2(5r^2 + 4r + 12)}{5(r^2 + 6r + 18)}$

Result: $\underline{\qquad\qquad}$

11.) (5 pts) Solve $\dfrac{t}{t-6} = \dfrac{36}{t^2-6t}$

$$\Rightarrow \frac{t}{t-6} = \frac{36}{t(t-6)}$$

$$\Rightarrow t^2 = 36$$

$$\Rightarrow t^2 - 36 = 0$$

$$\Rightarrow (t+6)(t-6) = 0$$

$$\Rightarrow t = \pm 6$$

$$\boxed{t = -6}$$

Solution: _____$t = -6$_____

12.) (5 pts) Solve $\dfrac{4x}{x+1} + \dfrac{4+9x}{x} = \dfrac{4}{x^2+x}$
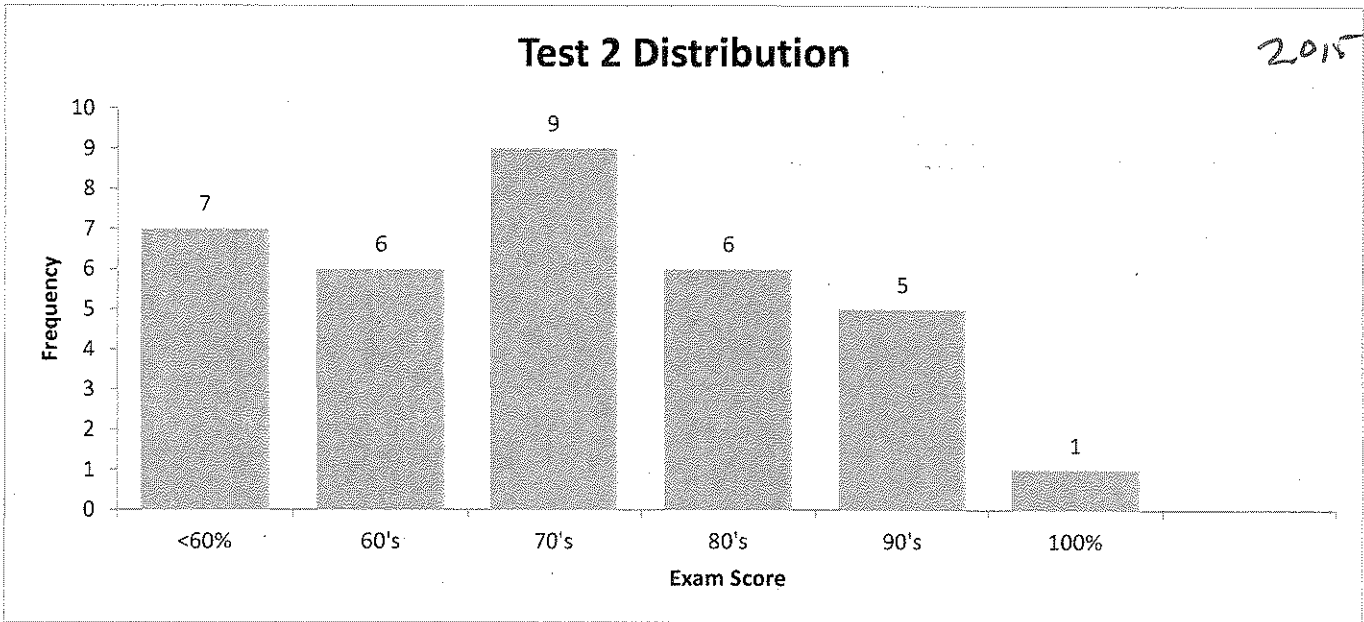
$$\Rightarrow 4x^2 + (4+9x)(x+1) = 4$$

$$\Rightarrow 4x^2 + 13x + 9x^2 + 4 = 4$$

$$\Rightarrow 13x^2 + 13x = 0$$

$$\Rightarrow 13x(x+1) = 0$$

$$\Rightarrow \cancel{x = 0} \text{ or } \cancel{x = -1}$$

Solution: _____No solution_____

Test 2 Distribution 2015

Exam Score	<60%	60's	70's	80's	90's	100%
Frequency	7	6	9	6	5	1

Handwritten below chart: 9   6   3   6   5   0   2017