

Name _____

Each problem is worth 5 point: 3-points for Work/Explanation and 2 points for the correct answer. Use another piece of paper to complete your work. Number the problems and box your answers. Partial credit will be awarded. Neatness counts. Single cross outs are ok.

Write and sign the Qcademic Honesty Statement below.

Factor the polynomial completely.

1) $x^3 - 125$

Simplify.

2) $\frac{5 + \frac{1}{3}}{4 - \frac{2}{27}}$

Solve the equation.

3) $4[-5x + 7 - 3(x + 1)] = -5x + 4$

Solve using the substitution method.

4) $y = 2x + 4$
 $3x + y = 29$

Find the average rate of change of the function over the given interval.

5) $y = \frac{3}{x - 2}, [4, 7]$

Find an equation of the line in point - slope form that passes through these points.

6) Passing through (4, -4) and (0, 7)

Find the requested value.

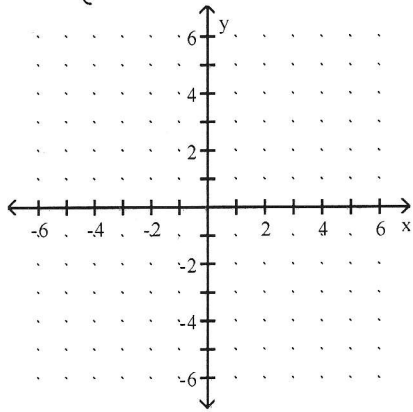
7) Find $f(0)$ and $f(10)$ for
 $f(x) = \begin{cases} x - 9, & \text{if } x < 2 \\ 8 - x, & \text{if } x \geq 2 \end{cases}$

Practice / Reference
PS 1

me

Graph the function.

$$8) f(x) = \begin{cases} x + 5 & \text{if } x > 0 \\ 1 & \text{if } x \leq 0 \end{cases}$$



Solve.

9) Sales of frozen pizza for a club fund-raiser increased from 500 one year to 645 the next year. What was the percent of increase?

$$10) \frac{3}{x} + \frac{6}{7} = 1$$

Practice PS 1 Key

①

$$x^3 - 125 \quad \text{use } a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

$$(x)^3 - (5)^3 \quad \boxed{(x-5)(x^2 + 5x + 25)}$$

②

$$\frac{\left(5 + \frac{1}{3}\right) 27}{\left(4 - \frac{2}{27}\right) 27} = \frac{135 + 9}{108 - 2} = \frac{144}{106}$$

or $\frac{72}{53}$

Another way

$$\frac{5\frac{1}{3}}{3\frac{25}{27}} \cdot \frac{\frac{16}{3}}{\frac{106}{27}} = \frac{\frac{8}{16}}{3} \cdot \frac{\frac{9}{27}}{\frac{106}{53}} = \frac{72}{53}$$

③

$$4[-5x + 7 - 3(x-1)] = -5x + 4$$

$$4[-5x + 7 - 3x + 3] = -5x + 4$$

$$4[-8x + 10] = -5x + 4$$

$$-32x + 40 = -5x + 4$$

$$36 = 27x$$

$$\frac{36}{27} = x$$

or $\frac{12}{9}$ or $\frac{4}{3}$

④

$$y = 2x + 4$$

$$3x + y = 29 \rightarrow 3x + (2x + 4) = 29$$

$$3x + 2x + 4 = 29$$

$$5x + 4 = 29$$

$$5x = 29$$

$$x = 5$$

$$y = 2(5) + 4$$

$$= 14$$

$(5, 14)$

Check $3(5) + 14 = 29$ ✓

⑤

$\frac{3}{x-2}$ on $[4, 7]$

$$F(7) = \frac{3}{5}$$

$$F(4) = \frac{3}{2}$$

~~$$\frac{\frac{3}{5} - \frac{3}{2}}{\frac{7}{5} - \frac{4}{2}}$$~~

~~$$\frac{\frac{3}{5} - \frac{3}{2}}{\frac{7}{5} - 2}$$~~

~~$$\frac{6 - 15}{10}$$~~

$$-\frac{9}{10} \cdot \frac{1}{2} = -\frac{9}{20}$$

$$= -\frac{9}{20}$$

(6)

$$(4, -4) (0, 7)$$

$$m = \frac{7 - (-4)}{0 - 4} = \frac{11}{-4}$$

PT Slope Form

$$y - y_1 = m(x - x_1)$$

$$y - \square = \square(x - \square)$$

use (4, -4) $y + 4 = -\frac{11}{4}(x - 4)$

use (0, 7) $y - 7 = -\frac{11}{4}x$

(7)

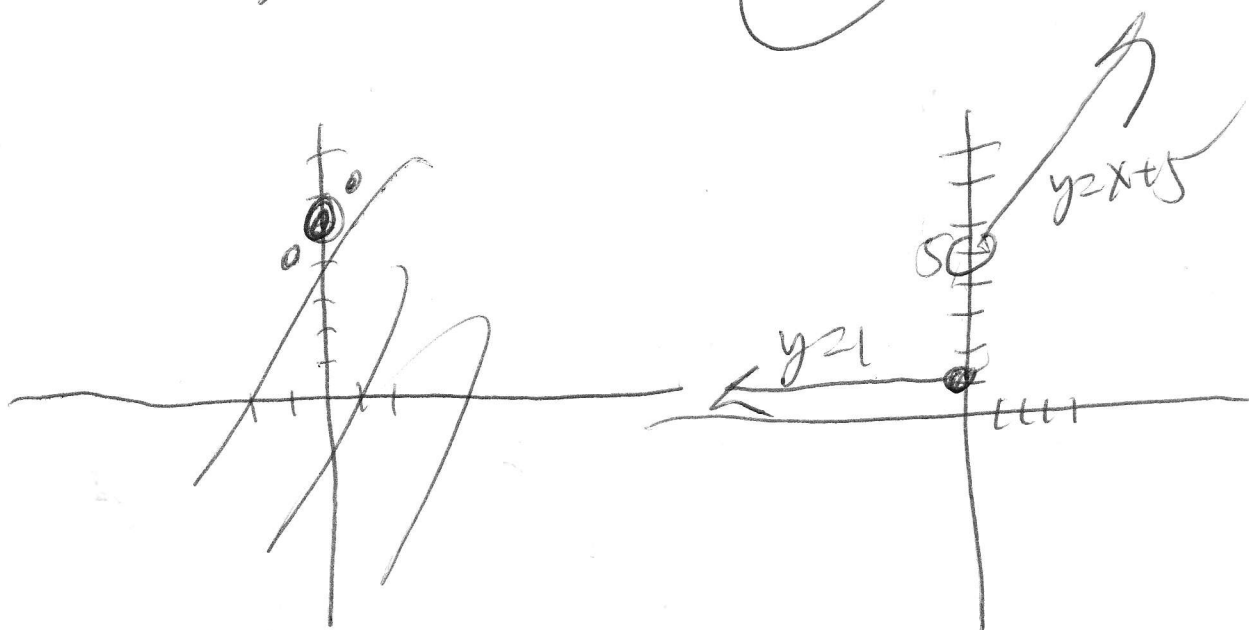
$$f(0) = 0 - 9$$

$$-9$$

$$f(10) = 8 - 10$$

$$-2$$

(8)



(9)

$$\frac{\text{New-old}}{\text{old}} \times 100$$

$$\frac{645-500}{500} \times 100$$

$$\frac{145}{500} \times 100$$

29%

$$(10) 7x \left(\frac{3}{x} + \frac{6}{7} \right) = (1) 7x$$

$$21 + 6x = 7x$$

$$\boxed{21 = x}$$

Clear
the
denominators