

Name: _____

Date: 1/29/26

Test Prep 1

1. Simplify or factor

I made this test prep
with your test in mind,
So you shouldn't need
a calculator!

a) $\frac{8a^{10}b^7}{11a^3b}$

b) $2x^2 + 11x - 36$

c) $x^4 - 7x^3 + 10x^2$

d) $3x^2 - 12$

2. Solve the rational equations and check for extraneous solutions

Hint: Find a LCD

$$a) \frac{1}{x+5} + \frac{1}{x-5} = \frac{4}{x^2-25}$$

$$b) \frac{3}{n+1} = \frac{5}{n-3}$$

3. Solve these quadratics by completing the square

$$a) x^2 + 4x + 3 = 0$$

$$b) 2x^2 - 8x + 9 = 0$$

4. Find the difference quotient of

$$f(x) = 3x + 2$$

$$\begin{aligned} &\text{difference quotient} \\ &= \frac{f(x+h) - f(x)}{h} \end{aligned}$$

5. For the function $f(x) = (x-5)^2$ whose graph is shown below, find the net change and average rate of change between the following values

$$x=1 \text{ and } x=4$$

6. Polynomial long division

1) Divide $(x^3 + 9x^2 + 23x + 15)$ by $(x+1)$. Then, factor the result.

7. Solve $e^{2x} - e^x - 6 = 0$

8. Evaluate the following rational functions

$$a) \frac{2x^2 - 8x - 24}{x^2 - 5x - 6}$$

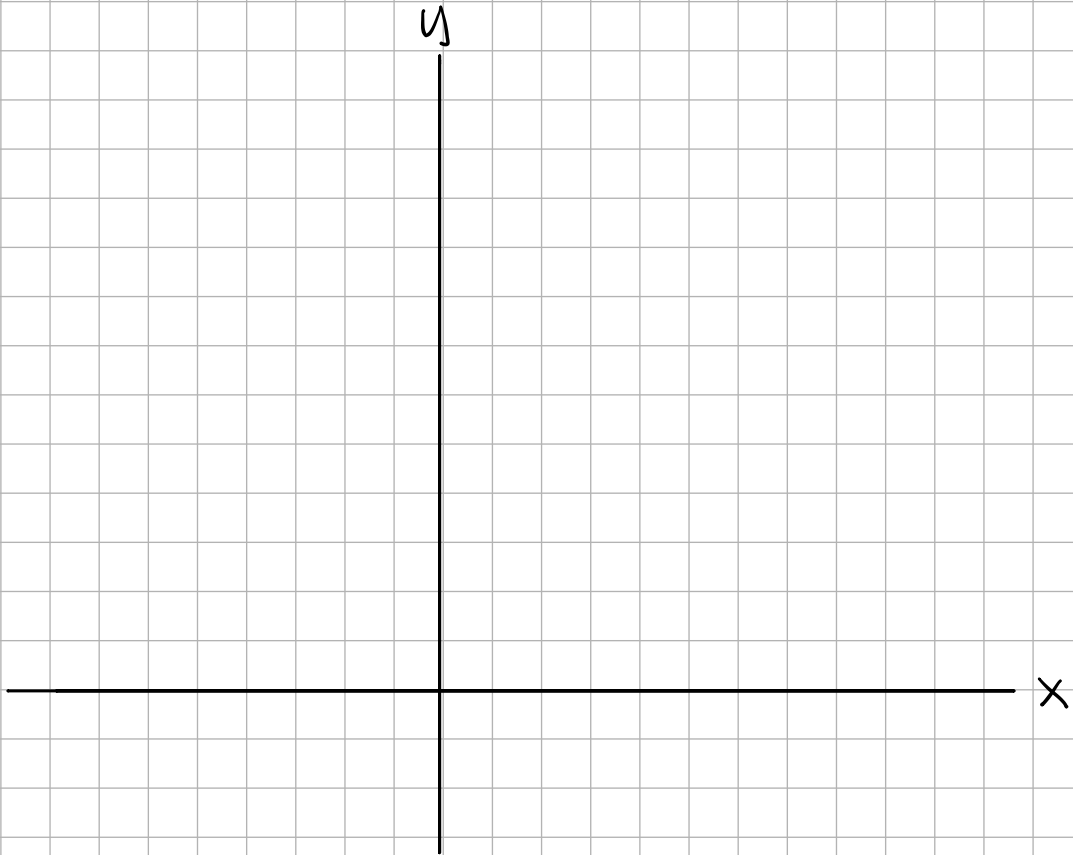
$$b) \frac{x^2 + 5x + 4}{x - 3}$$

9. Polynomial inequality (open and closed intervals)

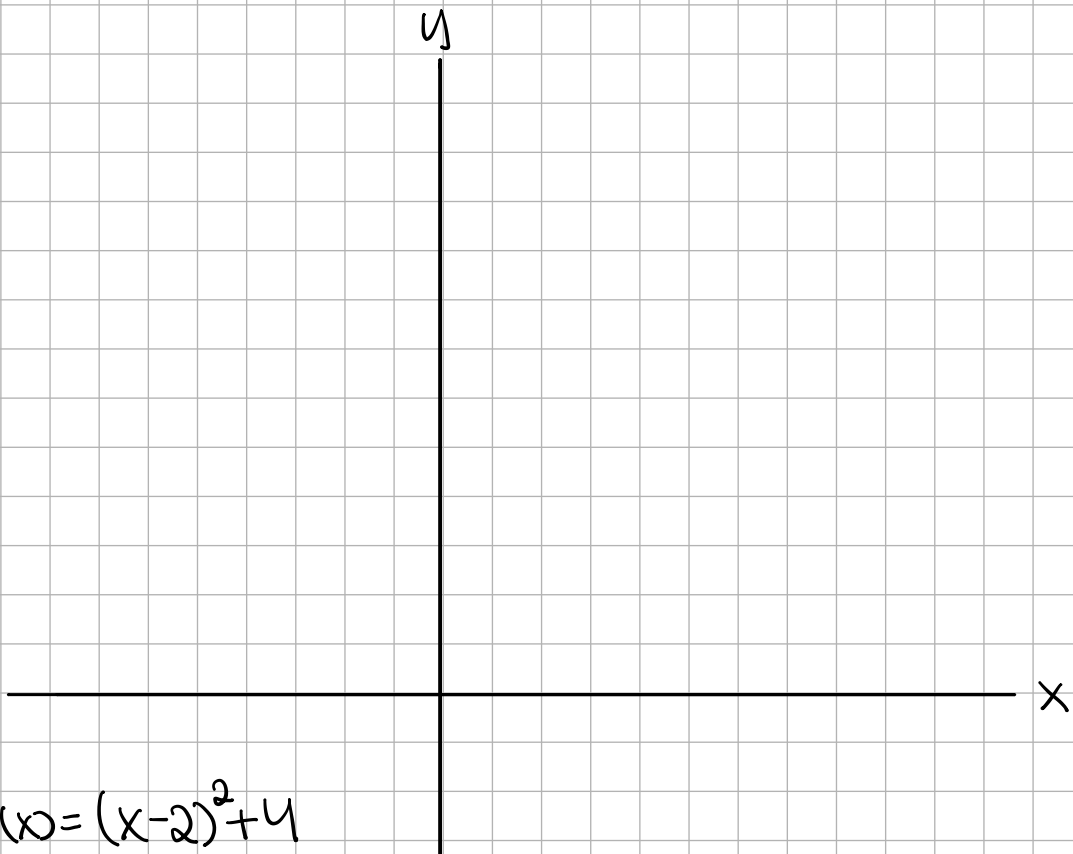
$$a) \frac{(x+2)(x-1)}{(x-3)(x+4)} \geq 0$$

10. Transformations

(each square is 1)



a) $y = 3(-x^2 + 2)$



b) $f(x) = (x-2)^2 + 4$

c) $y = 2 - (4x - 3)$

