Math 375
Spring 2026
Exam 1, February 18

No books, notes, scratch paper, phones.
Please show all your work and clearly mark your answers.
Problems are 5 points unless noted.
If a problem is too hard, move on to an easier one.
No calculators.

Page	Pts	Possible
1		15
2		15
3		20
4		20
5		20
6		10
Total		100

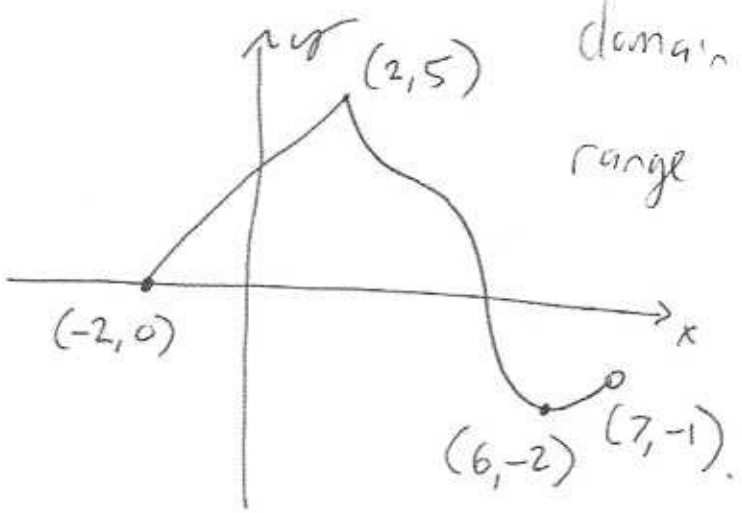
Name (printed): Key

Name (signature): _____

Score for the class so far: _____ out of _____ points

Percent: _____ % Approximate letter grade:

1) Find the domain and range of the function pictured by this graph.



domain $[-2, 7)$

range $[-2, 5]$

2) Find the regions where this function is…

a) Positive

b) Negative

c) Increasing

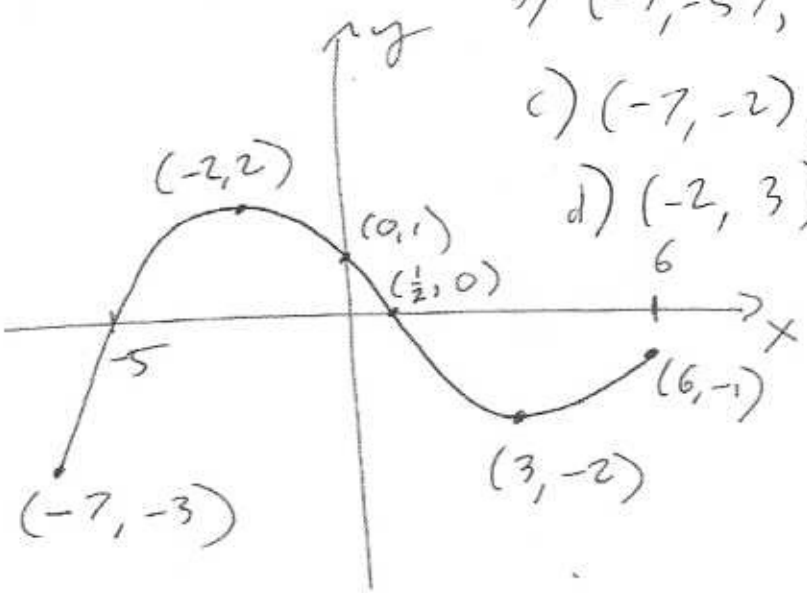
d) Decreasing

a) $(-5, \frac{1}{2})$

b) $(-7, -5), (\frac{1}{2}, 6)$

c) $(-7, -2), (3, 6)$

d) $(-2, 3)$



3) Write the definition of "open interval."

The set of all real numbers x where $a < x < b$ for any real numbers a and b where $a < b$.

4a) Graph the interval for: x is less than or equal to -6.
b) Write this interval using interval notation.
c) Write this interval using inequality notation.

b) $(-\infty, -6]$

c) $x \leq -6$

5) Factor, if possible (10 points)
a) $x^2 - 15x + 44$
b) $6x^2 + 23x + 7$
c) $x^2 - 14x - 40$

a) $(x-11)(x-4)$

b) $6x^2 + 21x + 2x + 7$

$3x(2x+7) + 1(2x+7)$

$(3x+1)(2x+7)$

c) Numbers multiply to 40 and diff by 14

$40 = 40 \cdot 1 \quad 39$
$= 20 \cdot 2 \quad 18$
$= 10 \cdot 4 \quad 6$
$8 \cdot 5 \quad 3$

not factorable into whole #s

6) Graph:

$y = 2x^2 - 9x + 1$

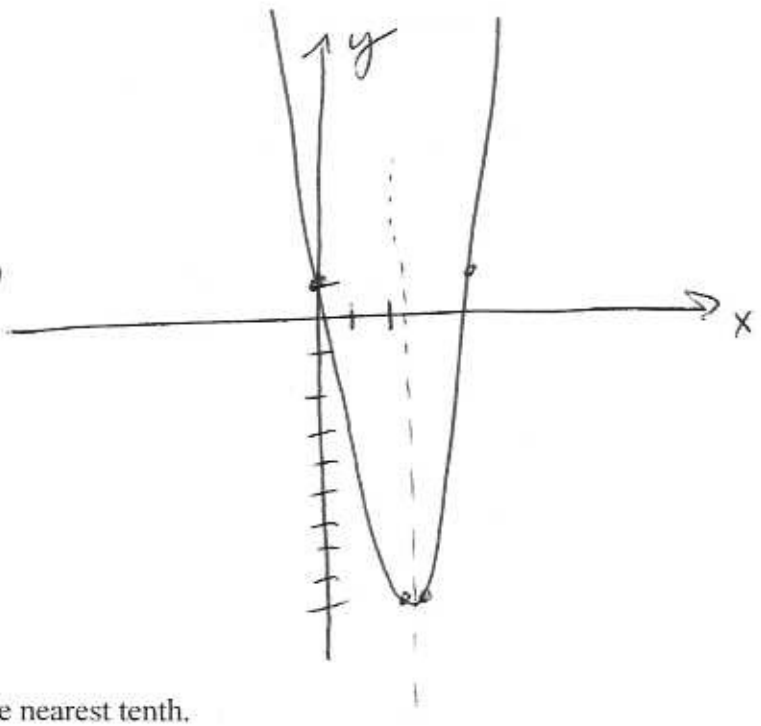
Hint: Find a point or two near the vertex

y-int = 1

vertex $x = \frac{9}{4}$

Plug in $x = 2$

$y = 8 - 18 + 1 = -9$



7) What is 57% of 823? Write answer to the nearest tenth.

$$\begin{array}{r} 823 \\ \times\ .57 \\ \hline 5761 \\ 4115 \\ \hline 469.11 \end{array}$$

469.1

8) Solve for x:

$$\frac{2}{x-5} = \frac{5}{2x-7}$$

clock $\frac{2}{6}$ $\frac{5}{22-7}$ $\frac{5}{15}$

$4x - 14 = 5x - 25$

$11 = x$

9) Write the equation of a horizontal line through $(9, -3)$.

$y = -3$

10) Find each answer. No partial credit for this problem. Zero points or five points.

a) $15 * 0$ 0

b) $0 \div (-3)$ 0

c) $7 \div 0$ undefined

d) $\frac{1}{0}$ undefined

e) $\frac{0}{122}$ 0

11) Simplify:

$\sqrt{32x^7}$ $\sqrt{16 \cdot 2}\sqrt{x^6 \cdot x}$

$4x^3\sqrt{2x}$

12) Write as a composition of 2 simpler functions:

$h(x) = \sqrt[3]{x - 20}$

$f(x) = \sqrt[3]{x}$

$g(x) = x - 20$

$h(x) = f(g(x))$

13) Add and simplify.

$\frac{5}{12} + \frac{7}{8}$

$\frac{10}{24} + \frac{21}{24}$ $\frac{31}{24}$

14) Solve:

$x^2 - 5x - 11 = 0$

$x = \frac{5 \pm \sqrt{25+44}}{2} = \frac{5 \pm \sqrt{69}}{2}$

15) Find the domain (just the domain) of

$f(x) = \frac{x-2}{x^2-16}$

$x \neq 4, -4$

16) Multiply out: (10 points)

$(x+4)^3$

+5 for this

$(x+4)(x+4)(x+4)$

$(x^2+8x+16)(x+4)$

$x^3+12x^2+48x+64$

17) Graph: (10 points)

$3x - 10y = 29$

x-int

$3x = 29$

$x = 9\frac{2}{3}$

y-int

$-10y = 29$

$y = -2.9$