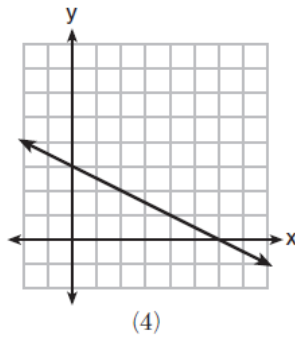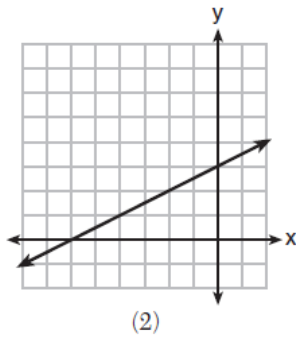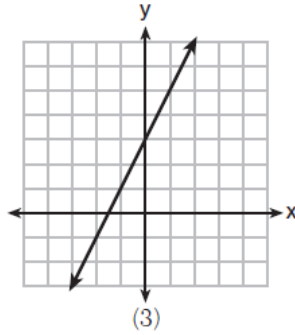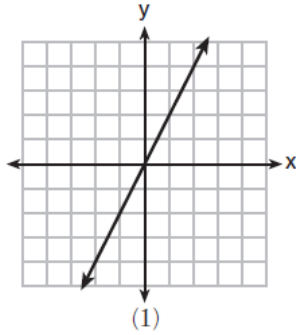Algebra 1 Quick Quiz 02052025
Question 1.

Which graph shows a line where each value of y is three more than half of x?

(1)

(3)

(2)

(4)

Question 2

The table below shows the average diameter of a pupil in a person's eye as he or she grows older.

Age (years)	Average Pupil Diameter (mm)
20	4.7
30	4.3
40	3.9
50	3.5
60	3.1
70	2.7
80	2.3

What is the average rate of change, in millimeters per year, of a person's pupil diameter from age 20 to age 80?

(1) 2.4   (3) −2.4

(2) 0.04   (4) −0.04

Question 3.

Consider the graph of the function $s(x) = x^2 + 6x + 9$.

Part A

The function $r(x)$ is defined as $r(x) = k \cdot s(x)$, where k is a constant. Which statements about the graphs of $s(x)$ and $r(x)$ are true?

Select **all** that apply.

- [ ] A. When $k < 0$, the vertex of the graph of $r(x)$ is a minimum.

- [ ] B. When $k < 0$, the vertex of the graph of $r(x)$ is a maximum.

- [ ] C. When $k > 1$, the graph of $r(x)$ is a vertical stretch of the graph of $s(x)$.

- [ ] D. When $k > 1$, the graph of $r(x)$ is a vertical compression of the graph of $s(x)$.

- [ ] E. When $0 < k < 1$, the graph of $r(x)$ is a vertical stretch of the graph of $s(x)$.

- [ ] F. When $0 < k < 1$, the graph of $r(x)$ is a vertical compression of the graph of $s(x)$.

Part B

The graph of $s(x)$ is translated to produce the graph of $t(x)$, where $t(x) = x^2 + 6x + 13$. Which is a correct description of the translation?

- ○ A. vertical shift 4 units up

- ○ B. vertical shift 4 units down

- ○ C. horizontal shift 4 units to the left

- ○ D. horizontal shift 4 units to the right

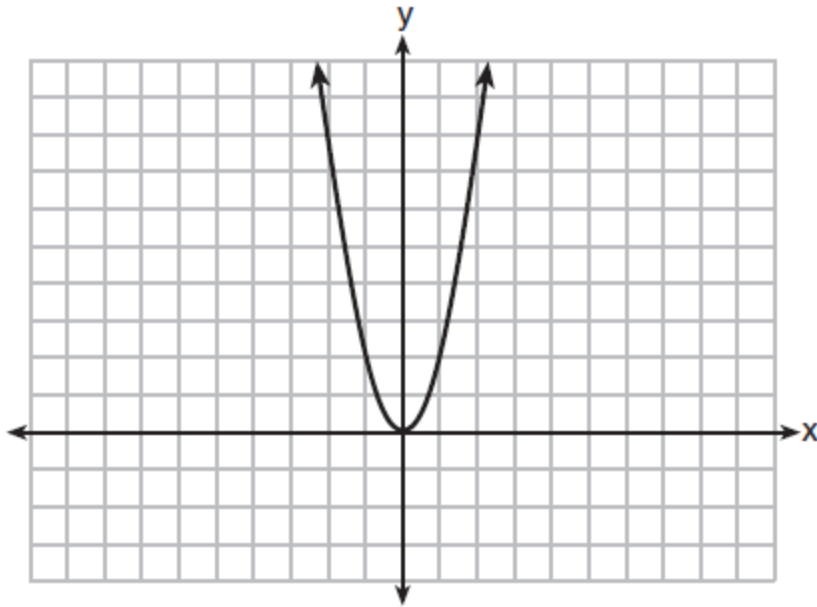Question 4.

Which expression is equivalent to $x^4 - 12x^2 + 36$?

(1) $(x^2 - 6)(x^2 - 6)$

(2) $(x^2 + 6)(x^2 + 6)$

(3) $(6 - x^2)(6 + x^2)$

(4) $(x^2 + 6)(x^2 - 6)$

Question 5.

The graph of the equation $y = ax^2$ is shown below.

If a is multiplied by $-\frac{1}{2}$, the graph of the new equation is

(1) wider and opens downward
(2) wider and opens upward
(3) narrower and opens downward
(4) narrower and opens upward

Question 6.

The zeros of the function $f(x) = (x + 2)^2 - 25$ are

(1) -2 and 5 (3) -5 and 2

(2) -3 and 7 (4) -7 and 3

Question 7.

During the 2010 season, football player McGee's earnings, m, were 0.005 million dollars more than those of his teammate Fitzpatrick's earnings, f. The two players earned a total of 3.95 million dollars. Which system of equations could be used to determine the amount each player earned, in millions of dollars?

(1) $m + f = 3.95$
$m + 0.005 = f$

(3) $f - 3.95 = m$
$m + 0.005 = f$

(2) $m - 3.95 = f$
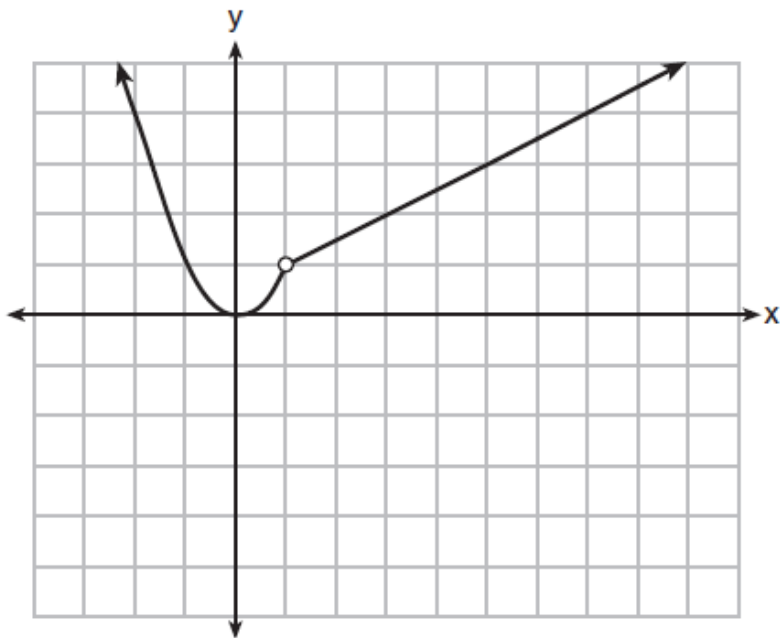$f + 0.005 = m$

(4) $m + f = 3.95$
$f + 0.005 = m$

Question 8.

What is the value of x in the equation $\dfrac{x-2}{3} + \dfrac{1}{6} = \dfrac{5}{6}$?

(1) 4

(3) 8

(2) 6

(4) 11

Question 9.

A function is graphed on the set of axes below.

Which function is related to the graph?

(1) $f(x) = \begin{cases} x^2, & x < 1 \\ x - 2, & x > 1 \end{cases}$ (3) $f(x) = \begin{cases} x^2, & x < 1 \\ 2x - 7, & x > 1 \end{cases}$

(2) $f(x) = \begin{cases} x^2, & x < 1 \\ \frac{1}{2}x + \frac{1}{2}, & x > 1 \end{cases}$ (4) $f(x) = \begin{cases} x^2, & x < 1 \\ \frac{3}{2}x - \frac{9}{2}, & x > 1 \end{cases}$
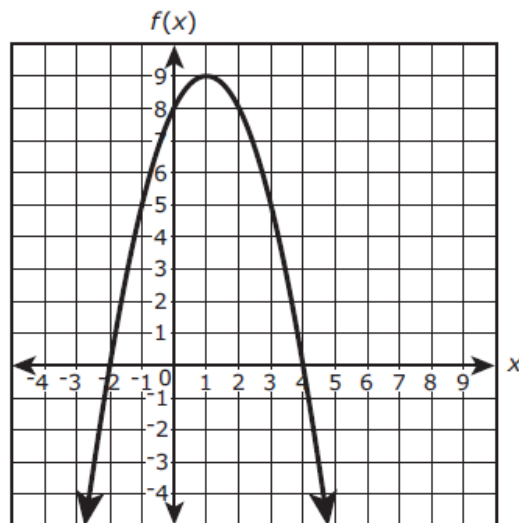
Question 10.

The function $h(t) = -16t^2 + 144$ represents the height, $h(t)$, in feet, of an object from the ground at t seconds after it is dropped. A realistic domain for this function is

(1) $-3 \le t \le 3$ (3) $0 \le h(t) \le 144$

(2) $0 \le t \le 3$ (4) all real numbers

Bonus Question

Question 11

The figure shows a graph of the function of $f(x)$ in the xy-coordinate plane, with the vertex at $(1, 9)$ and the zeros at -2 and 4.

$f(x)$

The function g is defined by $g(x) = -3x + 2$.

Which statements are true? Select **all** that apply.

Ⓐ $f(-2)$ is greater than $g(-2)$.

Ⓑ $f(-1)$ is less than $g(-1)$.

Ⓒ $f(0)$ is greater than $g(0)$.

Ⓓ $f(1)$ is less than $g(1)$.

Ⓔ $f(2)$ is greater than $g(2)$.