Multiple choice questions - Graphs and transformations

Year: Year 12 · 10

Question 1 The graph of $y = f(x + 5)$ is $y = f(x)$ translated by

- ◯ **A.** 5 right
- ◯ **B.** 5 left
- ◯ **C.** 5 up
- ◯ **D.** 5 down

Question 2 The graph of $y = f(x) - 2$ is a translation of

- ◯ **A.** 2 left
- ◯ **B.** 2 right
- ◯ **C.** 2 down
- ◯ **D.** 2 up

Question 3 $y = f(3x)$ is a stretch with scale factor

- ◯ **A.** 3 parallel to y
- ◯ **B.** $\frac{1}{3}$ parallel to x
- ◯ **C.** 3 parallel to x
- ◯ **D.** $\frac{1}{3}$ parallel to y

Question 4 $y = -f(x)$ is a reflection in the

- ◯ **A.** y-axis
- ◯ **B.** x-axis
- ◯ **C.** line $y = x$
- ◯ **D.** origin only

Question 5 The asymptotes of $y = \dfrac{1}{x}$ are

- ◯ **A.** $x = 1, y = 1$
- ◯ **B.** $x = 0, y = 0$
- ◯ **C.** $y = x$
- ◯ **D.** none

Question 6 The curve $y = (x - 2)^2$ touches the x-axis at

- ◯ **A.** $x = -2$
- ◯ **B.** $x = 2$

- ◯ **C.** $x = 4$
- ◯ **D.** $y = 2$

Question 7 If $(1, 5)$ is on $y = f(x)$, the image on $y = f(x) + 1$ is

- ◯ **A.** $(2, 5)$
- ◯ **B.** $(1, 6)$
- ◯ **C.** $(0, 5)$
- ◯ **D.** $(1, 4)$

Question 8 Which equation has the graph of $y = x^2$ translated 2 right and 3 down?

- ◯ **A.** $y = (x + 2)^2 - 3$
- ◯ **B.** $y = (x - 2)^2 - 3$
- ◯ **C.** $y = (x - 2)^2 + 3$
- ◯ **D.** $y = (x + 3)^2 - 2$

Question 9 A cubic with a repeated root

- ◯ **A.** never touches the x-axis
- ◯ **B.** touches the x-axis at that root
- ◯ **C.** has no turning point
- ◯ **D.** crosses at that root

Question 10 The curves $y = x^2$ and $y = \dfrac{1}{x}$ (for $x > 0$) meet

- ◯ **A.** never
- ◯ **B.** once
- ◯ **C.** twice
- ◯ **D.** three times

Answer grid - Graphs and transformations

Year: Year 12

Question	Answer	Explanation
1	**B**	Inside brackets, backwards.
2	**C**	Outside brackets subtracts from y.
3	**B**	Horizontal and reciprocal.
4	**B**	All y values change sign.
5	**B**	The axes.
6	**B**	Repeated root at 2.
7	**B**	Add 1 to y.
8	**B**	$x \to x - 2$, then -3.
9	**B**	Touches without crossing.
10	**B**	At $(1, 1)$, and no other positive point.