Wingate University Mathematics Placement Test

Results from this test will be used to determine what level math class you should take at Wingate University. You will not be allowed to see your score on this test.

Please do NOT ask other people for help, or use additional books, notes or webpages on the internet. Carefully answer all of the questions with the best answer choice available. You may only attempt the test one time.

* Required

1. Email address *

2. First Name *

3. Last Name *

4. Wingate University ID number *

5. Question 1 *

Simplify:

$$\frac{4}{9} - \left(-\frac{5}{6}\right)$$

A) $-\frac{1}{6}$

B) $-\frac{7}{18}$

C) $\frac{23}{18}$

D) $-\frac{23}{18}$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

6. Question 2 *

Simplify:

$$(7^2 - 4^2) - [24 \div (-6)]$$

A) $-\frac{3}{2}$

B) 37

C) 29

D) 10

Mark only one oval.

- A
- B
- C
- D
- I don't know.

7. Question 3 *

Evaluate:

$$3 + 2(x - 8)^4, \text{ for } x = 10$$

A) 35

B) 6

C) 2401

D) 259

Mark only one oval.

- A
- B
- C
- D
- I don't know.

8. Question 4 *

Simplify:

$$4x - 7(x - 5)$$

A) $3x + 35$

B) $-3x + 35$

C) $-3x - 35$

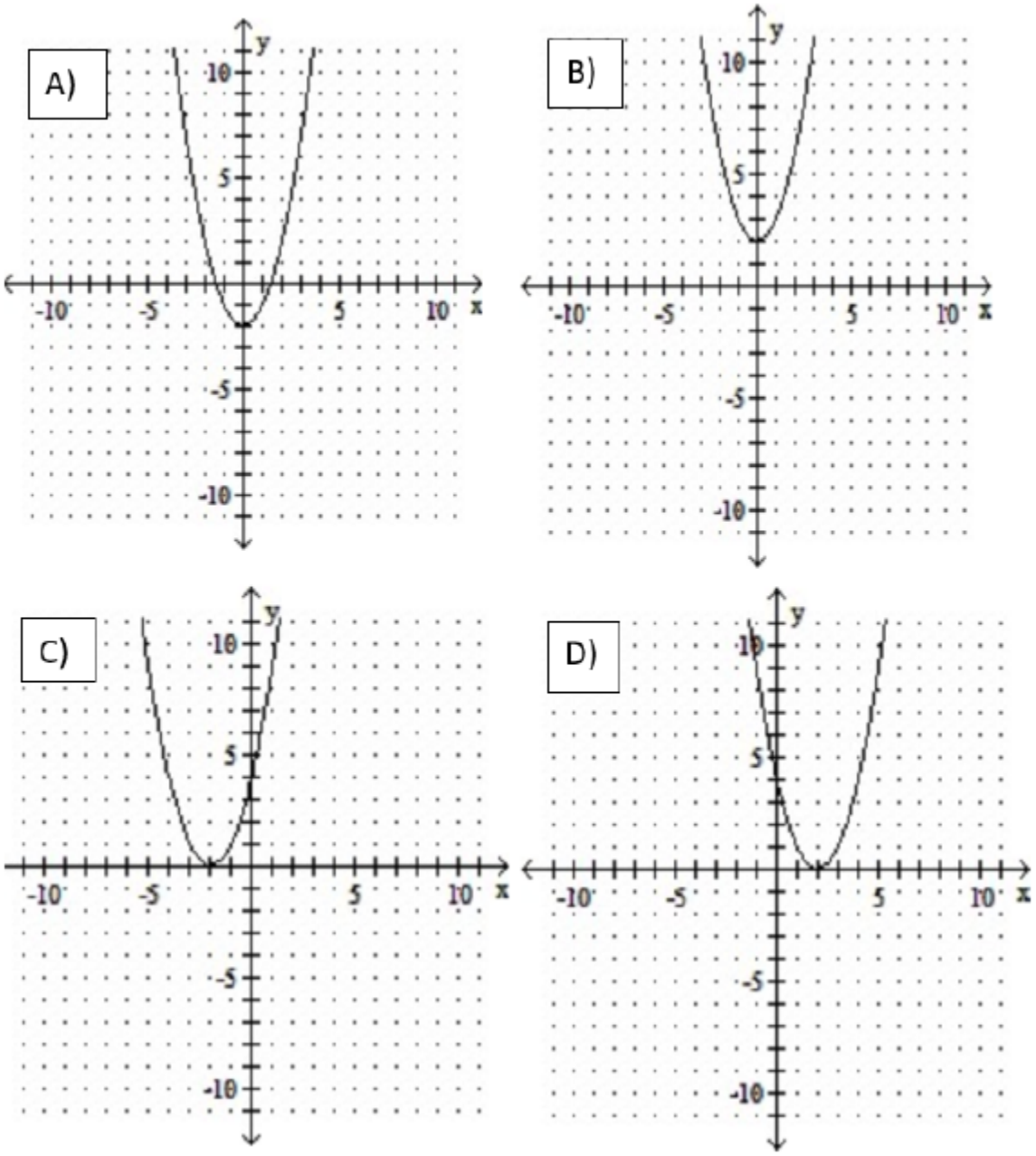
D) $3x - 35$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

9. Question 5 *

Graph $y = x^2 + 2$ in a rectangular coordinate system.



Mark only one oval.

- A
- B
- C
- D
- I don't know.

10. Question 6 *

Solve the formula for the specified variable:

$$V = \frac{1}{3}lwh \text{ for } h$$

A) $h = \frac{3V}{lw}$

B) $h = \frac{V}{3lw}$

C) $h = 3V - lw$

D) $h = 3Vlw$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

11. Question 7 *

Simplify:

$$(2x^5)\,(4x^{-1})$$

A) $8x^5$

B) $\frac{8}{x^4}$

C) $8x^4$

D) $\frac{8}{x^5}$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

12. Question 8 *

Simplify:

$$\left(\frac{12x^{-5}y^{3}}{3xy^{-3}}\right)^{-3}$$

A) $\dfrac{x^{12}}{64y^{18}}$

B) $\dfrac{4x^{18}}{y^{18}}$

C) $\dfrac{x^{18}y^{18}}{64}$

D) $\dfrac{x^{18}}{64y^{18}}$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

13. Question 9 *

Write in decimal notation:

$$1.4 \times 10^{-6}$$

A) 0.00000014

B) 0.0000014

C) 0.00014

D) 0.000014

Mark only one oval.

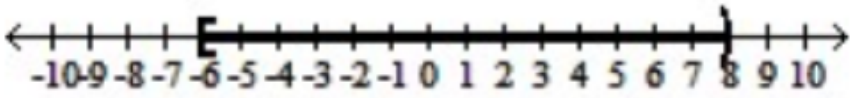
- A
- B
- C
- D
- I don't know.

14. Question 10 *

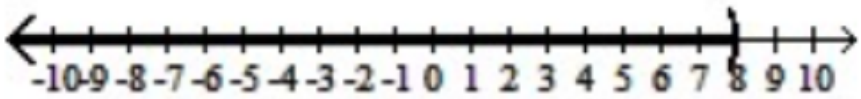
Express the interval in set builder notation and graph the interval on a number line.

$$[-6, 8)$$

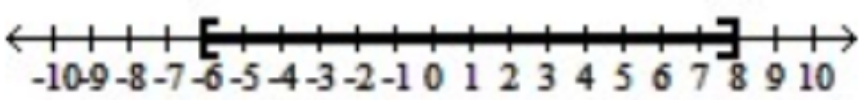
A) $\{x| -6 \leq x < 8\}$



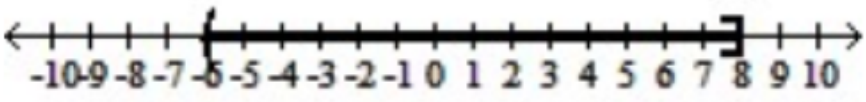
B) $\{x|x < 8\}$



C) $\{x| -6 \leq x \leq 8\}$



D) $\{x| -6 < x \leq 8\}$



Mark only one oval.

- A
- B
- C

- D
- I don't know.

15. Question 11 *

Simplify:

$$(x+3)(2x-5)$$

A) $2x^2 - 13x - 15$

B) $2x^2 + x - 15$

C) $6x^2 - 3x - 10$

D) $2x^2 - 17x - 15$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

16. Question 12 *

Solve:

$$7x + 1 = 8x - 15$$

A) $x = 16$

B) $x = 2$

C) $x = \frac{16}{15}$

D) $x = -2$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

17. Question 13 *

Translate into an expression:

five less than twice a number

A) $5 - 2x$

B) $2(x - 5)$

C) $2(5 - x)$

D) $2x - 5$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

18. Question 14 *

Add:

$$\frac{3x}{5} + \frac{x+1}{5}$$

A) $\frac{4x+1}{5}$

B) $\frac{3x^2+1}{5}$

C) $\frac{2x+1}{5}$

D) $\frac{1}{5}$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

19. Question 15 *

State the greatest common factor:

$$3x^5y^3 + 9x^2y$$

A) $3x^2y$

B) x^2y

C) $9x^2y$

D) $9xy$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

20. Question 16 *

Simplify:

$$-3(2b+1)+5(b+2)-(4b-1)$$

A) $7b+12$

B) $-5b+2$

C) $-5b+8$

D) $-4b+2$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

21. Question 17 *

For any angle θ, if $\sin\theta = 1$, then $\cos\theta =$

A) π

B) $\frac{\pi}{2}$

C) 0

D) 1

Mark only one oval.

- A
- B
- C
- D
- I don't know.

22. Question 18 *

Which of the following are equal?

I	$\cos \pi$
II	$\sin 0$
III	$\ln e$
IV	$\tan \frac{\pi}{4}$

A) II and IV only

B) III and IV only

C) I and III only

D) I and II only

Mark only one oval.

- A
- B
- C
- D
- I don't know.

23. Question 19 *

Simplify:

$$\frac{1}{x} + \frac{1}{2x}$$

A) $\frac{3}{x}$

B) $\frac{3}{2x}$

C) $\frac{2x+1}{2x}$

D) $\frac{1}{2x}$

Mark only one oval.

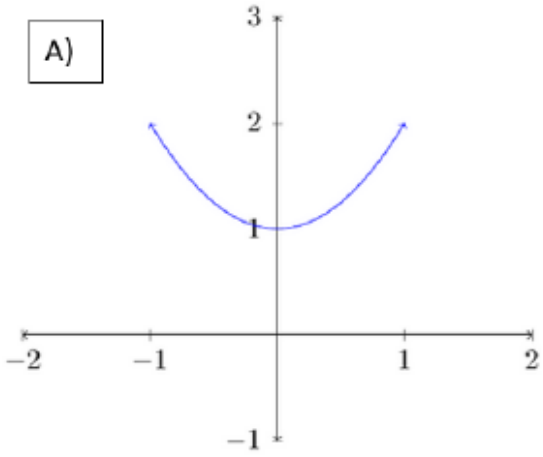
- A
- B
- C
- D
- I don't know.

24. Question 20 *

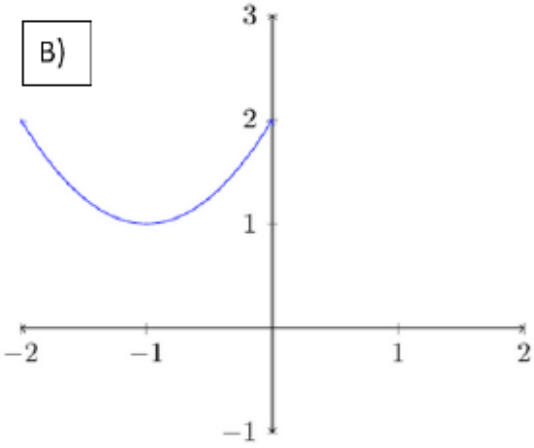
Select the graph that best represents the function:

$$f(x) = (x-1)^2 + 1$$

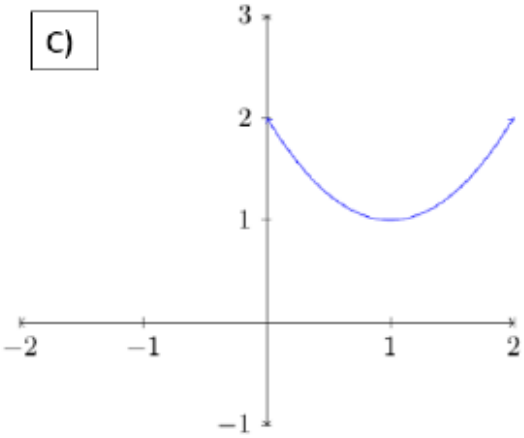
A)



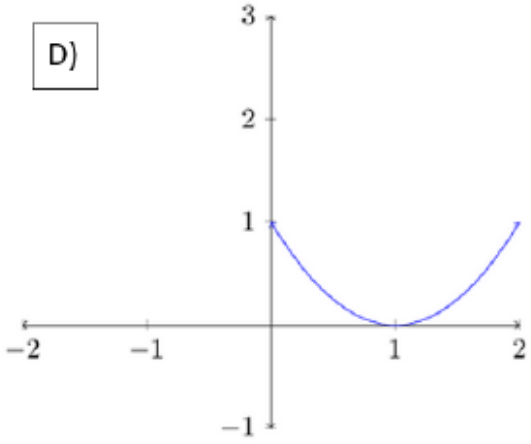
B)



C)



D)



Mark only one oval.

- A
- B
- C
- D
- I don't know.

25. Question 21 *

For any angle θ, $\sin^2\theta + \cos^2\theta =$

A) $\tan\theta$

B) Not enough information.

C) 1

D) 0

Mark only one oval.

- A
- B
- C
- D
- I don't know.

26. Question 22 *

If $\tan x = 1$, then $\cot x =$

A) 1

B) π

C) 0

D) Cannot be determined.

Mark only one oval.

- A
- B
- C
- D
- I don't know.

27. Question 23 *

Simplify $(-3a^3)^2$.

A) $9a^6$

B) $-9a^6$

C) $-9a^5$

D) $9a^5$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

28. Question 24 *

Simplify $\frac{a^5b^{-3}}{a^2b^5}$

A) a^7b^2

B) $\frac{a^3}{b^8}$

C) $\frac{a^{10}}{b^{15}}$

D) a^3b^8

Mark only one oval.

- A
- B
- C
- D
- I don't know.

29. Question 25 *

If $f(x) = x^2 + 5$ and $g(x) = \frac{x}{2}$, then $f(g(x)) =$

A) $\frac{x^2}{4} + 25$

B) $\frac{x^2}{4} + 5$

C) $\frac{x^2}{2} + 25$

D) $\frac{x^2}{2} + 5$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

30. Question 26 *

. Solve $\frac{x^2-4}{x^2-1}=0$

A) $x=-1,1$

B) $x=-2,2$

C) $x=2$

D) $x=-2,2,-1,1$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

31. Question 27 *

If $f(t) = t^2 + t + 1$, then $f(t + h) =$

A) $(t^2 + h^2) + (t + h) + 1$

B) $(t^2 + 1) + (h^2 + 1)$

C) $(t^2 + t + 1) + (h^2 + h + 1)$

D) $(t + h)^2 + (t + h) + 1$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

32. Question 28 *

Which of the following is a factor of $9x^2 - 16y^2$?

A) $(9x^2 - 16y^2)$

B) $(3x^2 - 4y^2)$

C) $(3x - 4y)$

D) $(9x - 16y)$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

33. Question 29 *

Which of the following cannot be true?

A) $\cos x = 1$

B) $\tan x = 0$

C) $\sin x = 2$

D) $e^x = 100$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

34. Question 30 *

Which value of x is not in the domain of $f(x) = \frac{1}{\sqrt{x}}$?

A) π

B) 0

C) 1

D) All real values of x are in the domain of $f(x)$.

Mark only one oval.

- A
- B
- C
- D
- I don't know.

35. Question 31 *

For $a, b > 0$, which property is true?

A) $\dfrac{1}{\sqrt{a}+\sqrt{b}} = \dfrac{1}{\sqrt{a}} + \dfrac{1}{\sqrt{b}}$

B) $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$

C) $\sqrt{ab} = \sqrt{a}\sqrt{b}$

D) $|b-a| = b-a$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

36. Question 32 *

Solve $x^2 + 7x + 12 = 0$

A) $x = -3, -4$

B) $x = -4$

C) $x = -3$

D) $x = 3, 4$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

37. Question 33 *

Solve $2x - 6 \leq 10$

A) $x \leq 8$

B) $x \geq 8$

C) $x \leq 11$

D) $x \geq 11$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

38. Question 34 *

An equation of a line that passes through $(0, 10)$ and has a slope of 5 is given by:

A) $y = 10x + 5$

B) $y = 10x$

C) $y = 5x$

D) $y = 5x + 10$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

39. Question 35 *

Using properties of logarithms, we can write $\log(x^2)$ as

A) $2\log(x^2)$

B) $\log(2x)$

C) $2\log(x)$

D) $2\log(2x)$

Mark only one oval.

- A
- B
- C
- D
- I don't know.

40. Question 36 *

If $\sin\theta = a$ and $\cos\theta = b$, then $\tan\theta =$

A) Not enough information.

B) ab

C) $\frac{b}{a}$

D) $\frac{a}{b}$

Mark only one oval.

- A
- B
- C
- D
- I don't know.