# QUIZ BOWL

## XAVIER UNIVERSITY

## 2024 MATHEMATICS COMPETITION

# Factor

$$x^2 - 6x + 5$$

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$$(x - 5)(x - 1)$$

Give the formula for the volume of a right circular cone.

$$V = \frac{1}{3}\pi r^2 h$$

# Simplify.

$$-2^{-3}$$

# Simplify.

$$-2^{-3} = -\frac{1}{8}$$

# Simplify.

$$\frac{5}{9} + \frac{1}{3}$$

# Simplify.

$$\frac{5}{9} + \frac{1}{3} = \frac{8}{9}$$

In what number base does $1 + 2 = 10$?

3

# How many real solutions?

$$x^2 + 4x = 2$$

# How many real solutions?

2

Solve for $x$.

$$6x^3 = 384$$

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$$x = 4$$

Solve for the acute angle $x$.

$$\sin(x) = \frac{1}{2}$$

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$$\sin(x) = \frac{1}{2}$$

$$x = \frac{\pi}{6} \text{ (or } 30°\text{)}$$

# Simplify.

$$\log_{25}(5)$$

Simplify.

$$\log_{25}(5)$$

$$\frac{1}{2}$$

# Which is closest to $(1, -2)$?

$(3, -5)$ $(0, 3)$

$(3, 0)$ $(-5, -5)$

# Which is closest to $(1, -2)$?

$(3, 0)$

Solve for $t$.

$$4^{3-2t} = 1$$

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$$t = \frac{3}{2}$$

The edges of a rectangular box are 3, 4, and 5 inches. What is the surface area of the box? (Include units.)

94 sq. in.

Solve for $x$.

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

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$$x=27$$

What lines in the plane have a slope of 0?

# horizontal lines

Solve for $P$.

$$A = P + Prt$$

Solve for $P$.

$$A = P + Prt$$

$$P = \frac{A}{1 + rt}$$

# END OF ROUND 1