

- 1. Make sense of problems and persevere in solving them.**
- 2. Reason abstractly and quantitatively.**
- 3. Construct viable arguments and critique the reasoning of others.**
- 4. Model with mathematics.**
- 5. Use appropriate tools strategically.**
- 6. Attend to precision.**
- 7. Look for and make use of structure.**
- 8. Look for and express regularity in repeated reasoning.**

High School Problems

A.

For what values of x is the expression $\frac{x-1}{x^2+4}$ positive?

B.

-20, -16, -12, -8,

In the sequence above, each term after the first is 4 greater than the preceding term. Which of the following could not be a term in the sequence?

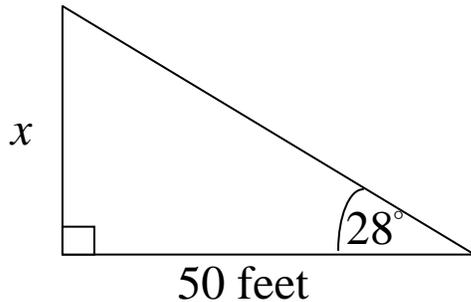
- A. 0
- B. 200
- C. 440
- D. 668
- E. 762

C.

Can square have an area of exactly 5 square inches? Justify your answer.

D.

Find the height of a tree to the nearest tenth if the angle of elevation of the sun is 28° and the shadow of the tree is 50 feet.



E.

Mr. Stephans, a cattle rancher, has 600 feet of barbed wire with which to enclose a temporary “holding pen” for his cattle in the middle of an open field. The pen must have two strands of wire running parallel to the ground: one strand is 2 feet off of the ground, and the other is four feet off of the ground. Describe how Mr. Stephans should use the 600 feet of wire to enclose the largest possible area.