SAT Practice Chapter 2 Pre-Calculus/Trig-Pre-Calc

Name:_____ Grade Level:_____

$ax^3 + bx^2 + cx + d = 0$

In the equation above, a, b, c, and d are constants. If the equation has roots -1, -3, and 5, which of the following is a factor of $ax^3 + bx^2 + cx + d$?

A) $x - 1$
B) $x + 1$
C) $x - 3$
D) $x + 5$

NC

Which of the following expressions is equivalent to $\frac{x^2 - 2x - 5}{x - 3}$?

A) $x - 5 - \frac{20}{x-3}$
B) $x - 5 - \frac{10}{x-3}$
C) $x + 1 - \frac{8}{x-3}$
D) $x + 1 - \frac{2}{x-3}$

NC

$x^3 - 5x^2 + 2x - 10 = 0$

For what real value of x is the equation above true?

NC

$2x^2 - 4x = t$

In the equation above, t is a constant. If the equation has no real solutions, which of the following could be the value of t ?

A) -3
B) -1
C) 1
D) 3

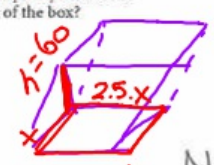
NC

How many liters of a 25% saline solution must be added to 3 liters of a 10% saline solution to obtain a 15% saline solution?

$0 < 7x + 60 \leq 130$
$-60 \quad -60$ NC
$\frac{7x}{7} \leq \frac{70}{7}$

A shipping service restricts the dimensions of the boxes it will ship for a certain type of service. The restriction states that for boxes shaped like rectangular prisms, the sum of the perimeter of the base of the box and the height of the box cannot exceed 130 inches. The perimeter of the base is determined using the width and length of the box. If a box has a height of 60 inches and its length is 2.5 times the width, which inequality shows the allowable width x, in inches, of the box?

A) $0 < x \leq 10$
B) $0 < x \leq 11\frac{2}{3}$
C) $0 < x \leq 17\frac{1}{2}$
D) $0 < x \leq 20$



NC

$2w + 2l$
$2(w + l)$
$2(x + 2.5x)$
$= 7x$

$f(x) = 2x^3 + 6x^2 + 4x$ $\quad g(x) = x^2 + 3x + 2$

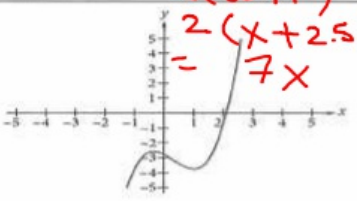
$3x^2 + 9x + 6 \quad x \leq 10$

The polynomials $f(x)$ and $g(x)$ are defined above. Which of the following polynomials is divisible by $2x + 3$?

$-3/2$

A) $h(x) = f(x) + g(x)$ $\quad 2x^3 + 7x^2 + 7x + 2$
B) $p(x) = f(x) + 3g(x)$ $\quad 2x^3 + 9x^2 + 13x + 6$
C) $r(x) = 2f(x) + 3g(x)$
D) $s(x) = 3f(x) + 2g(x)$

C



The function $f(x) = x^3 - x^2 - x - \frac{11}{4}$ is graphed in the xy-plane above. If k is a constant such that the equation $f(x) = k$ has three real solutions, which of the following could be the value of k ?

A) 2
B) 0
C) -2
D) -3

C

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NC

$x \cdot 0.25 + 3 \cdot 0.1 = (x+3)0.15$

How many liters of a 25% saline solution must be added to 3 liters of a 10% saline solution to obtain a 15% saline solution?

6.

(%)(amount) + (%)(amount) =

(%)(amount)

$(0.25)(x) + (0.10)(3) =$

$(0.15)(x+3)$

$0.25x + 0.30 = 0.15x + 0.45$

$x = 1.5\ L$

NC

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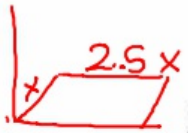

NC

perimeter = 2l + 2

$7x + 60 \leq 130 = 2(l$

$-60 \quad -60 = 2(2.5$

$\frac{7x}{7} \leq \frac{70}{7} = 7x$

$0 \leq x \leq 10$

$f(x) = 2x^3 + 6x^2 + 4x$

$g(x) = x^2 + 3x + 2$

The polynomials $f(x)$ and $g(x)$ are defined above. Which of the following polynomials is divisible by $2x + 3$?

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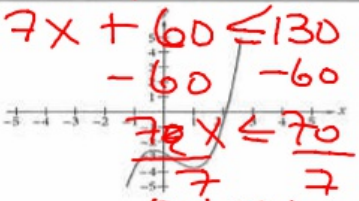
C



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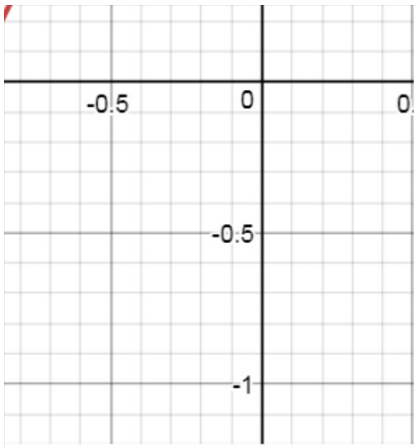
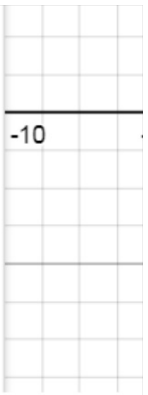
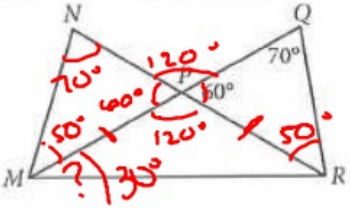
B) 0
C) -2
D) -3

C


-0.5
0
-0.5
-1

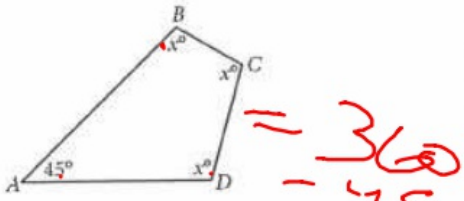

-10

SAT Practice Chapter 2 Pre-Calculus/Trig-Pre-Calc ----- Name:_____ Grade Level:_____



In the figure above, $\overline{MQ}$ and $\overline{NR}$ intersect at point P, $NP = QP$, and $MP = PR$. What is the measure, in degrees, of $\angle QMR$? (Disregard the degree symbol when gridding your answer.)

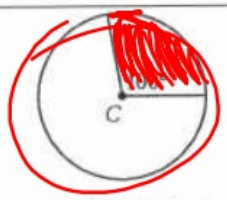
NC



In the figure above, what is the value of x ?

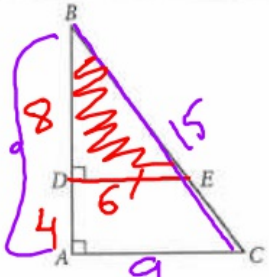
A) 45
B) 90
C) 100
D) 105

C



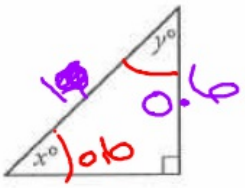
Point C is the center of the circle above. What fraction of the area of the circle is the area of the shaded region?

C



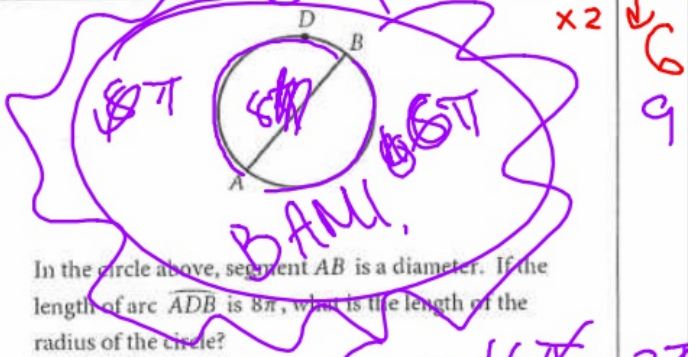
In the figure above, $\tan B = \frac{3}{4}$. If $BC = 15$ and $DA = 4$, what is the length of $\overline{DE}$?

C



In the triangle above, the sine of $x°$ is 0.6. What is the cosine of $y°$?

NC

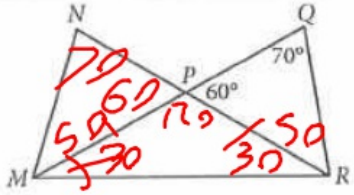


In the circle above, segment AB is a diameter. If the length of arc $\overline{ADB}$ is 8π, what is the length of the radius of the circle?

A) 2
B) 4
C) 8
D) 16

C

SAT Practice Chapter 2 Pre-Calculus/Trig-Pre-Calc ----- Name:_____ Grade Level:_____



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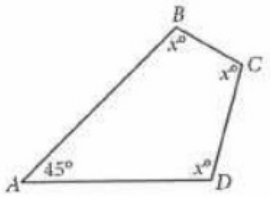

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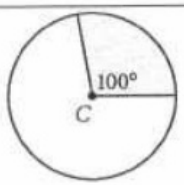

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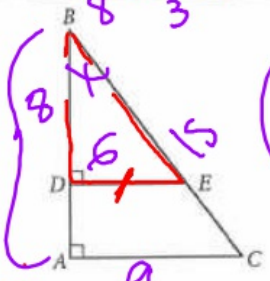

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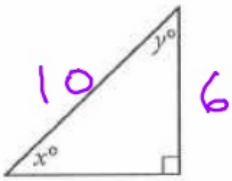

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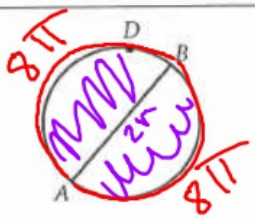

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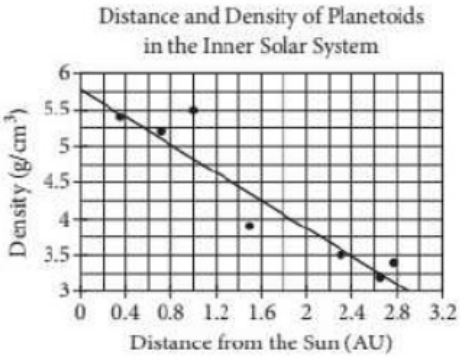
A) 2
B) 4
C) 8
D) 16

C

Chapter 1 SAT Practice: Calculator **Name:**_____



The scatterplot above shows the densities of 7 planetoids, in grams per cubic centimeter, with respect to their average distances from the Sun in astronomical units (AU). The line of best fit is also shown.

7

According to the scatterplot, which of the following statements is true about the relationship between a planetoid's average distance from the Sun and its density?

A) Planetoids that are more distant from the Sun tend to have lesser densities.

B) Planetoids that are more distant from the Sun tend to have greater densities.

C) The density of a planetoid that is twice as far from the Sun as another planetoid is half the density of that other planetoid.

D) The distance from a planetoid to the Sun is unrelated to its density.

2.

Lani spent 15% of her 8-hour workday in meetings. How many minutes of her workday did she spend in meetings?

A) 1.2

B) 15

C) 48

D) 72

3. A customer paid $53.00 for a jacket after a 6 percent sales tax was added. What was the price of the jacket before the sales tax was added?

A) $47.60

B) $50.00

C) $52.60

D) $52.84

4.

$$h(t) = -16t^2 + 110t + 72$$

The function above models the height h, in feet, of an object above ground t seconds after being launched straight up in the air. What does the number 72 represent in the function?

A) The initial height, in feet, of the object

B) The maximum height, in feet, of the object

C) The initial speed, in feet per second, of the object

D) The maximum speed, in feet per second, of the object

Chapter 1 SAT Practice: No Calculator **Name:**_____

1.

If $f(x) = \frac{x^2 - 6x + 3}{x - 1}$, what is $f(-1)$?

A) -5

B) -2

C) 2

D) 5

2.

Which of the following complex numbers is equal to $(5 + 12i) - (9i^2 - 6i)$, for $i = \sqrt{-1}$?

A) $-14 - 18i$

B) $-4 - 6i$

C) $4 + 6i$

D) $14 + 18i$

3.

$$x + y = 75$$

The equation above relates the number of minutes, x, Maria spends running each day and the number of minutes, y, she spends biking each day. In the equation, what does the number 75 represent?

A) The number of minutes spent running each day

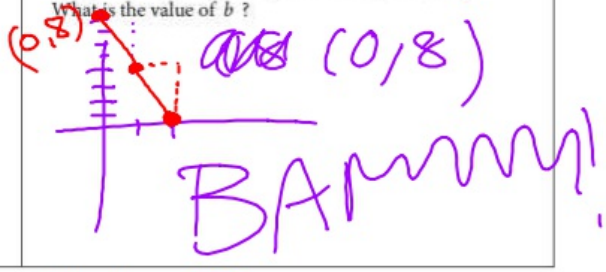
B) The number of minutes spent biking each day

C) The total number of minutes spent running and biking each day

D) The number of minutes spent biking for each minute spent running

4.

The graph of a line in the xy-plane passes through the point $(1, 4)$ and crosses the x-axis at the point $(2, 0)$. The line crosses the y-axis at the point $(0, b)$. What is the value of b ?



x_1, y_1 - Jenan

$(1, 4)$

x_2 - 1.3

$(2, 0)$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - }{2}$

$m = -4$

$y = mx + b$

$y - y_1 = m(x - x_1)$

$y - 4 = -4(x - 1)$

$y - 4 = -4x + 4$

$y = -4x + 8$