5

The number of bonus points, $B(p)$, that a credit card holder receives is given by the function $B(p) = 4p + 7$, where p represents the number of purchases made. If the number of purchases is increased by 3, by how much does the number of bonus points increase?

A) 3
B) 4
C) 12
D) 19

11
23

6

Jeff tests how the total volume occupied by a fluid contained in a graduated cylinder changes when round marbles of various sizes are added. He found that the total volume occupied by the fluid, V, in cubic centimeters, can be found using the equation below, where x equals the number of identical marbles Jeff added, one at a time, to the cylinder, and r is the radius of one of the marbles.

$$V = 24\pi + x\left(\frac{4}{3}\pi r^3\right)$$

If the volume of the graduated cylinder is 96π cubic centimeters, then, what is the maximum number of marbles with a radius of 3 centimeters that Jeff can add without the volume of the fluid exceeding that of the graduated cylinder?

A) 1
B) 2
C) 3
D) 4

$96\pi = 24\pi + x\left(\frac{4}{3}\pi\ 3^3\right)$

$-24\pi \quad -24\pi + x\left(\frac{4}{3}\pi \cdot 27\right)$

$\frac{72\pi}{36\pi} = \frac{x(36\pi)}{36\pi}$

$2 = x$

7

If b is two more than one-third of c, which of the following expresses the value of c in terms of b?

A) $c = \frac{b-2}{3}$
B) $c = \frac{b+2}{3}$
C) $c = 3(b-2)$
D) $c = 3(b-6)$

$\frac{1}{3}c = b - 2(3)$

$c = 6 + 3b$

b

$\frac{1}{3}c + 2 = b$

$-2 \quad -b$

8

The rotation rate of a mixing blade, in rotations per second, slows as a liquid is being added to the mixer. The blade rotates at 1,000 rotations per second when the mixer is empty. The rate at which the blade slows is four rotations per second less than three times the square of the height of the liquid. If h is the height of liquid in the mixer, which of the following represents $R(h)$, the rate of rotation?

A) $4 - 9h^2$
B) $1{,}000 - (4 - 3h)$
C) $1{,}000 - (9h - 4)$
D) $1{,}000 - (3h^2 - 4)$

height of liquid = h

$3h^2 - 4$

$1000 - (3h^2 - 4)$

4r/s

CONTINUE

3

5

The number of bonus points, $B(p)$, that a credit card holder receives is given by the function $B(p) = 4p + 7$, where p represents the number of purchases made. If the number of purchases is increased by 3, by how much does the number of bonus points increase?

A) 3
B) 4
C) 12
D) 19

$4(p+3)+7 \rightarrow 23$

$4(p)+7 \rightarrow 11$

$23 - 11 = 12$

6

Jeff tests how the total volume occupied by a fluid contained in a graduated cylinder changes when round marbles of various sizes are added. He found that the total volume occupied by the fluid, V, in cubic centimeters, can be found using the equation below, where x equals the number of identical marbles Jeff added, one at a time, to the cylinder, and r is the radius of one of the marbles.

$$V = 24\pi + x\left(\frac{4}{3}\pi r^3\right)$$

If the volume of the graduated cylinder is 96π cubic centimeters, then, what is the maximum number of marbles with a radius of 3 centimeters that Jeff can add without the volume of the fluid exceeding that of the graduated cylinder?

A) 1
B) 2
C) 3
D) 4

$96\pi = 24\pi + x\left(\frac{4}{3}\pi 3^3\right)$

$24\pi + x\frac{4\pi 27}{3}$

$96\pi - 24\pi + x\,36\pi$

$-24 \quad -24\pi$

$\frac{72\pi}{36\pi} = \frac{36\pi x}{36\pi}$

7

If b is two more than one-third of c, which of the following expresses the value of c in terms of b?

A) $c = \frac{b-2}{3}$

B) $c = \frac{b+2}{3}$

C) $c = 3(b-2)$

D) $c = 3(b-6)$

$b = \frac{1}{3}c + 2$

$-2 \quad -2$

$(3)(b-2) = \frac{c}{3}(3)$

$\frac{b+2}{3} = c$

8

The rotation rate of a mixing blade, in rotations per second, slows as a liquid is being added to the mixer. The blade rotates at 1,000 rotations per second when the mixer is empty. The rate at which the blade slows is four rotations per second less than three times the square of the height of the liquid. If h is the height of liquid in the mixer, which of the following represents $R(h)$, the rate of rotation?

A) $4 - 9h^2$
B) $1{,}000 - (4 - 3h)$
C) $1{,}000 - (9h - 4)$
D) $1{,}000 - (3h^2 - 4)$

1000 r/s

1006

CONTINUE

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FIVE STAR.

rate of rotation

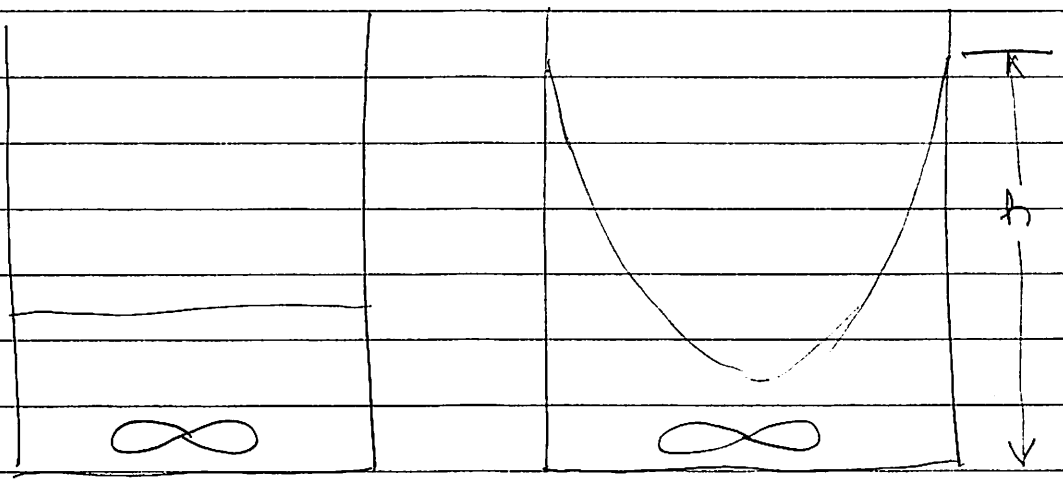
or

speed of rotation, = 1000 at empty
i.e no resistance

speed of rotation with fluid = 1000 - four rotations less than three times the sq. of the ht. of the fluid

→ $= 1000 - (3h^2 - 4)$

h = ht. of fluid.



Not spinning with fluid.

while spinning.