Math
Fitness Test

1. POWERS

Cancel to its simplest form $\dfrac{3x^2y}{9x^{-2}y^3}$

2. SCIENTIFIC FORM

Add

$2.1 \times 10^{-9} + 6.23 \times 10^{-8}$

3. ALGEBRA

factorize

$$(y^2 - 1)$$

4. ALGEBRA

Using variables *S* for the number of students and *P* for the number of professors, write an equation to represent the statement :

“There are six times as many students as professors”

5. SOLVING EQUATIONS

Solve for *a* and *b*

$$a + 2b = 0$$

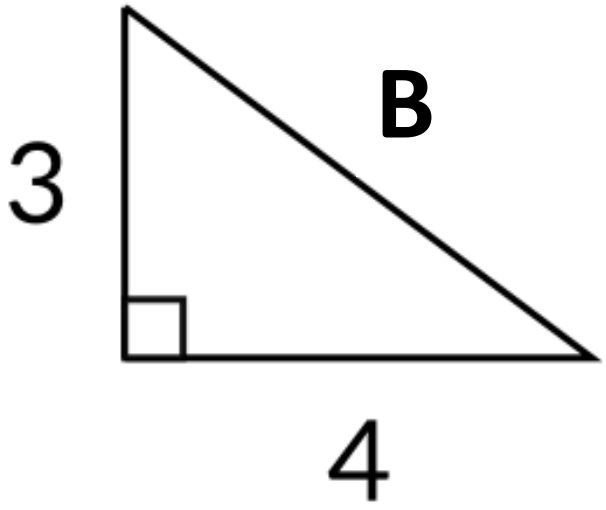
$$2a - 3b = 7$$

6. GRAPH SKETCHING

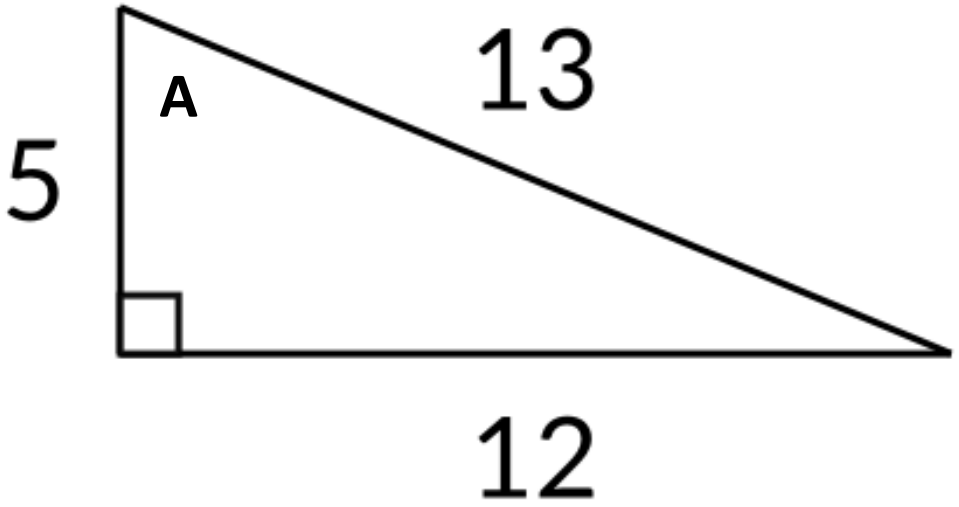
Sketch s vs t

$$s = -4t - 6$$

7. TRIGONOMETRY



Find B
&
tan A



8. DIFFERENTIATION

Differentiate with respect to b

$$\frac{b}{1+b}$$

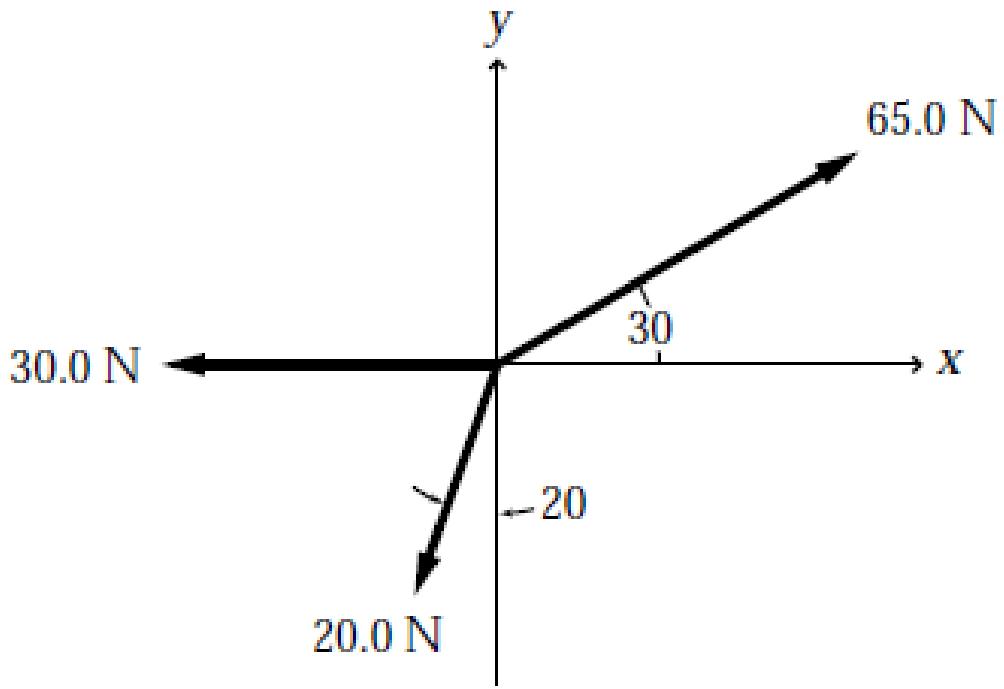
9. INTEGRATION

evaluate

$$\int_{-1}^{0} (x^3 + 2)\, dx$$

10. Vector Addition

What are the magnitude and direction of the resultant of the three vectors shown?



11. Vector Algebra

The vector **C** = 3**i** + 4**j** is added to a vector **B**. The resultant vector (**C** + **B**) is in the positive *y* direction and has a magnitude equal to that of **C**.

What is the magnitude of **B** to 2 significant figures?