MATHS

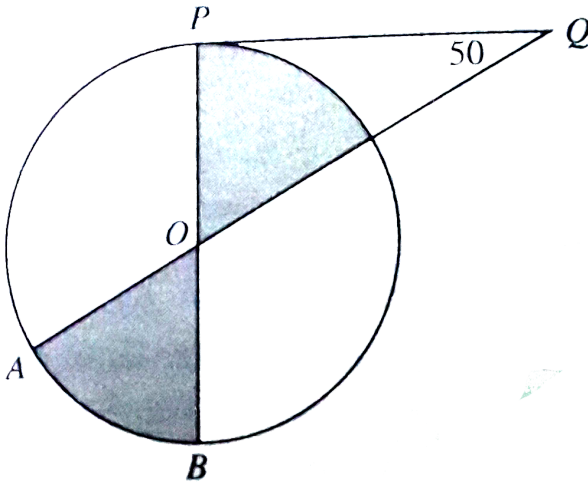# BOOKS - INDEPENDENTLY PUBLISHED MATHS (ENGLISH)

GETTING STARTED

Example

1. A soccer ball is kicked upward from gound level with an initial velocity of 52 feet per

second. The function $h(t) = -16t^2 + 52t$

gives the ball's height , in feet , after t seconds.

For how many seconds, to the nearest tenth of

a second , is the ball at least 20 feet above the

ground ?

2.

In the figure above, the circle with center O has $\overline{PQ}$ tangent to it at P. Find the ratio of the shaded area to the area of the circle .

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3. The following table , from the U.S. Census Bureau , shows the median annual earnings in 1999 of workers with different levels of education.

Median Annual Earnings (Ages 21–64)

Level of Education	Median Annual Earnings ($)
Not a high school graduate	21,332
High school graduate	27,351
Some college	31,988
Bachelor's degree	42,877
Advanced degree	55,242

By what percent did the median annual earning of a high school graduate (with no further education) exceed those of someone who was not a high school graduate ?

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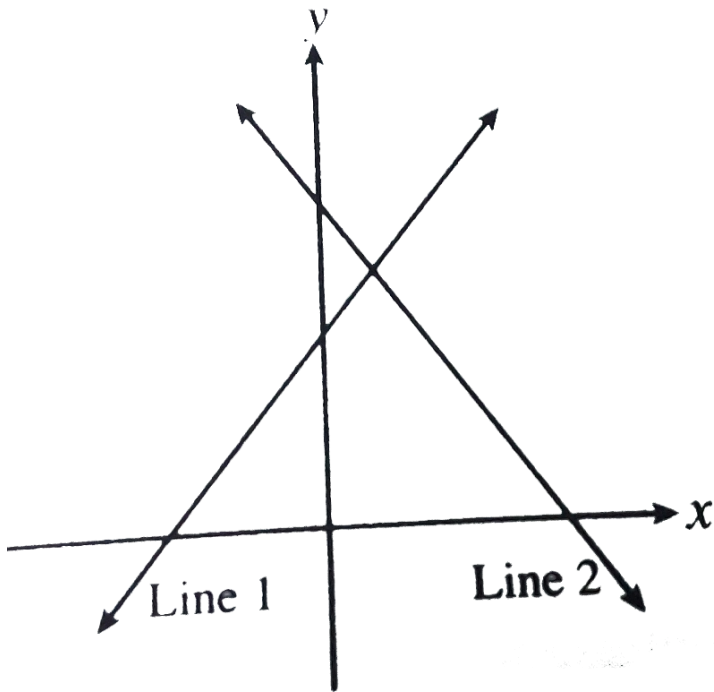
1.

Consider two lines in the xy-plane , as shown above. If line 1 has equation $y = m_1x + b_1$,

and line 2 has equation $y = m_2x + b_2$. Which is a true statement ?

A. $m_1 < m_2$

B. $b_1 < b_2$

C. $b_2 < 0$

D. $m_2 > 0$

Answer: B

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2. The friends start an international club that meets monthly . To increase membership, they decide that at the next meeting . Each member will being a friend , and at each subsequent meeting for the next 6 months. Each member will bring a new member . For this plan , whic of the following graphs , for x gt 0 , represents the number of members after x meetings ?

A.

B.
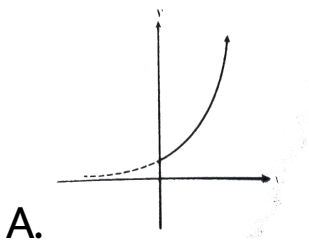
C.

D.

Answer: B

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3. Which is true of the function f(x)=(x-2)$\left(x^2 + 9\right)$?

   A. It has no real roots

   B. It has 3 real roots

C. It has 1 real root and 2 complex roots.

D. It has 3 complex roots .

Answer: C

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12 ft

5 ft

d

l
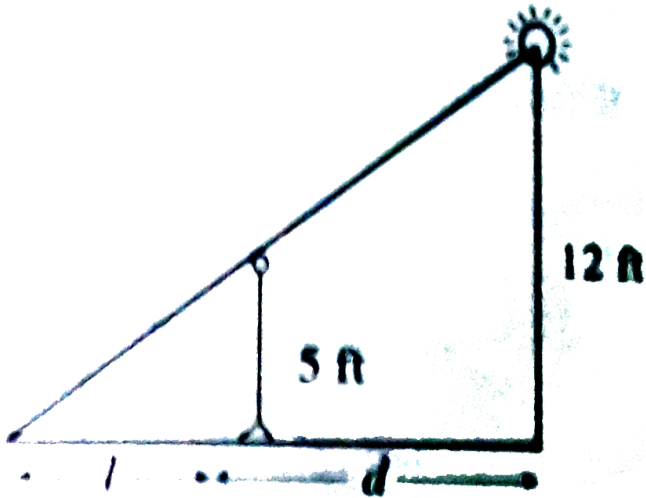
4.

A woman 5 feet tall stands near a street near a street lamp that is 12 feet tall, as shown in the figure above . Find a formula that expresses l, the length of her shadow , in terms of d , her distance from the base of the lamp.

A. $l = \dfrac{5}{12}d$

B. $l = \dfrac{5}{13}d$

C. $l = \dfrac{5}{7}d$

D. $l = \dfrac{12}{13}d$

Answer: C

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5. $16x = 12\left(x + \dfrac{1}{6}\right)$

Jay V left his house at 2:00 P.M. and rode his

bicycle down his street at a speed of 12 mph (miles per hour). When his friend Tamika arrived at his house at 2:10 P.M. , Jay V's mother sent her off in Jay V's direction down the same street , and Tamika cycled after him at 16 mph. At what time did Tamika catch up with Jay V ?

The equation above is used to solve this problem . What is the term $12\left(x + \dfrac{1}{6}\right)$ equal to ?

A. The time , in hours , Tamika took to catch up with Jay V

B. The time , in hours , Jay V cycled before Tamika caught up with him

C. The distance, in miles , traveled by Tamika

D. The average speed, in miles per hour , of Tamika and Jay V

Answer: C

6. Let $f(x) = 2^{-x}$ and $g(x) = 4.\,2^{-x}$ Which is true ?

    A. g(x)=f(x-2)

    B. g(x)=f(x+2)

    C. g(x)=f(x)-2

    D. g(x)=f(x)+2

Answer: A

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7. In a normal distribution of data, 68% of data values lie within 1 standard deviation of the mean , approximately 95% of data lie within 2 standard deviations of the mean , and 99.7% of data lie within 3 standard deviations of the mean. Suppose a set of data is normally distributed with a mean of 50 and standard deviation of 2. Approximately what percent of the data values are less than or equal to 46 ?

A. 16

B. 13.5

C. 5

D. 12.5

Answer: D

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8. if $\cos\alpha = \sin\beta$, and $\alpha = \dfrac{5\pi}{6}$, which could

be a value of β ?

A. $-\dfrac{\pi}{6}$

B. $\dfrac{\pi}{6}$

C. $-\dfrac{\pi}{3}$

D. $\dfrac{\pi}{3}$

Answer: C

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