

REVIEW PRELIM PAPER 1

13 OCTOBER 2014



Lesson Description

In this lesson we:

- Work through questions from various Paper 1 papers.



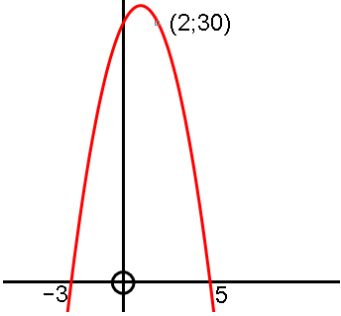
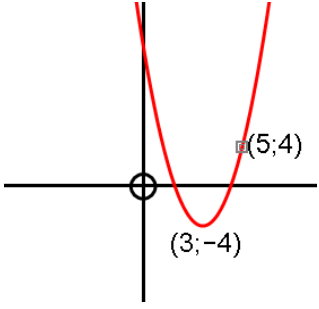
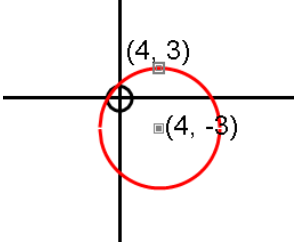
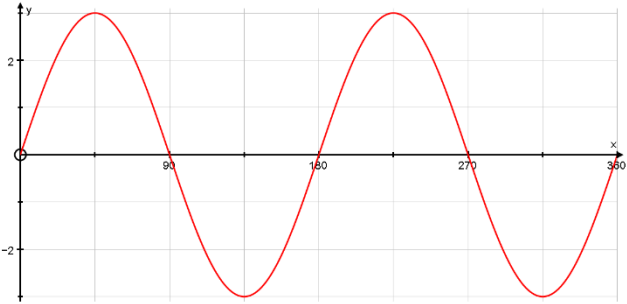
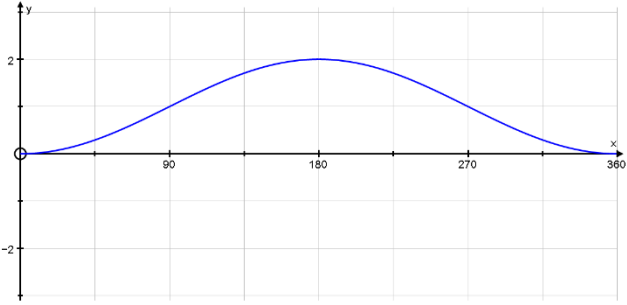
Test Yourself

Question 1

Determine the equation of each of the following graphs by matching the Graph to the correct equation

| | Graph | Equation |
|----|-------|--------------------------|
| 1. | | A. $y = -x + 3$ |
| 2. | | B. $y = 3 \cdot 2^x + 1$ |
| 3. | | C. $y = 3 \sin 2x$ |

notes for...

| | | |
|----|---|-----------------------------|
| 4. |  | D. $y = -2x^2 + 4x + 30$ |
| |  | E. $y = \frac{12}{x+2} + 1$ |
| 5. |  | F. $y = -\cos x + 1$ |
| 6. |  | G. $(x-4)^2 + (y+3)^2 = 36$ |
| 7. |  | H. $y = -2x + 3$ |

| | | |
|----|--|--------------------------|
| 8. | | i. $y = 2x^2 - 12x + 14$ |
| 9. | <p>Consider the figure below. Rectangle PQOR is inscribed in $\triangle AOB$ where O is the origin. The coordinates of A, B and P are $(3;0)$, $(0;3)$ and $(x;y)$ respectively. Determine the equation of AB.</p> | j. $y = \tan(x + 45)$ |



Improve your Skills

Question 1

Simplify the following:

a) $\frac{x^3 - 8}{6 - 3x}$

b) $\frac{3^{x+1} + 3^x}{m \cdot 3^x + 3^x \cdot 2^2} - \frac{3m - 12}{m^2 - 16}$

c) $\sqrt{x^2 - 10x + 25} + 5, \quad x \geq 5$

Question 2

Solve for x in terms of m :

- a) $3x^2 = m$
- b) $(mx + 1)(x - m) = 0$
- c) $5^{x-3} = m$
- d) $-2x < 4 - 10m$

Question 3

3.1 The first three terms of an arithmetic sequence are:

$10 - x ; 2x + 3 ; 4x + 1$

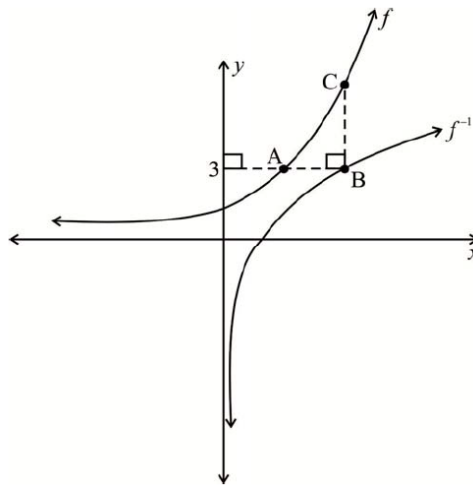
- a.) Calculate the value of x .
- b.) Find S_{23} .

3.2 Calculate the value of $\sum_{n=3}^6 (2n^2 - 1)$.

3.3 In a converging geometric series $S_{\infty} = \frac{40}{3}$ and $T_2 = \frac{5}{2}$; calculate the possible value(s) of the first term in the series.

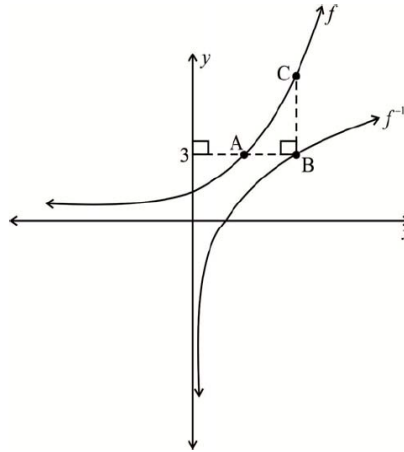
Question 4

In the diagram below $f(x) = 2^x$.

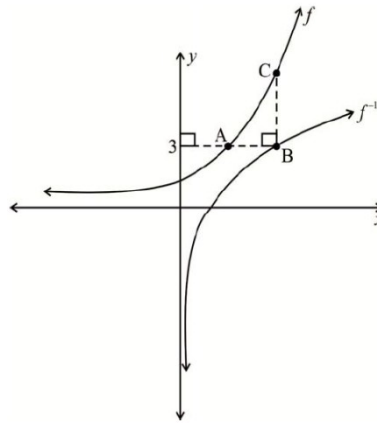


- a) Write down the equation of $f^{-1}(x)$ in the form $y = \dots$.

notes for...



- b) Calculate the length of AB.
c) Calculate the length of CB where $CB \perp AB$.



- d) Write down the domain of $f^{-1}(x)$.

Question 5

5.1 Given: $f(x) = -2x^2$. Determine $f'(x)$ from first principles.

5.2 Find $\frac{dy}{dx}$ for $y = 3\sqrt{x^3} + \frac{4}{\sqrt{x}} - \pi^3$.

5.3 Given $f(x) = x^3 + 3x^2 + x + 1$

- a.) Show that the tangent to the curve $y = f(x)$ at the point where $x = -2$ is $y = x + 5$.
b.) Determine the x-coordinate of the point where this tangent intersects the curve again.