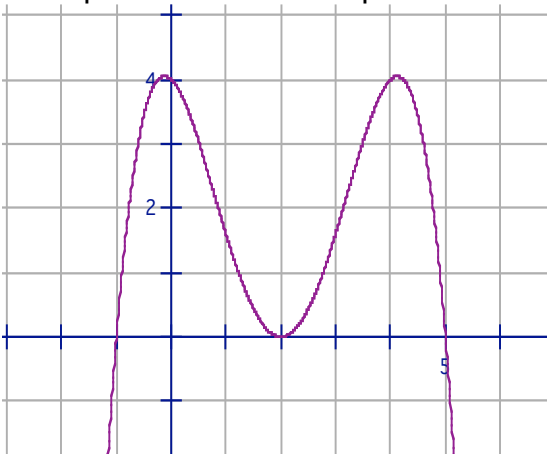


Day 2- Continued

Example 4: Find all possible value(s) of b such that $h(x) = -6x^2 - 24x + b$ is tangent to the function $g(x) = 3x^4$.

Example 5: Predict an equation for the graph shown below.



Example 6: Determine the value(s) of x such that $\frac{2x-1}{x^2-1} \leq 1$

- Example 7: a) Find the domain of the function $f(x) = \sqrt{2x+4} - \sqrt{x+1}$
b) Find the x-intercepts of $f(x) = \sqrt{2x+4} - \sqrt{x+1}$
c) Find the range of the function $f(x) = \sqrt{2x+4} - \sqrt{x+1}$

Example 8: Find all solutions to the equation $|x-3| + 2|x+1| = 8$

Day 2- Problems- No calculators All answers should be in exact form

1. a) Find the equation of the tangent to the curve $y = \frac{4}{x^2}$ at the point (2,1).
b) Find the point at which this tangent intersects the curve $y = \frac{4}{x^2}$ again.
c) Find the equations of any tangent to the curve $y = \frac{4}{x^2}$ which passes through the point Q(2,0). Note: Q is not on the curve

2. Given that the graph of $y = ax^3 + bx^2 + 4x - 12$ touches the x-axis at $x = -2$, find the values of a, b and find the other zero.

3. The function $f(x) = ax^3 + bx^2 - 3x - 2$ leaves a remainder of 24 when divided by $x - 2$ and it is known that $x + 1$ is a factor of $f(x)$.
 - a) Find a and b .
 - b) Determine the intervals when $f(x) > 0$
 - c) Determine the intervals when $f(x)$ is increasing

4. Determine the intervals where $\frac{x^2 - 8}{x - x^2} - x \leq 0$

5. Find the value(s) of c and a so that $y = cx^3 - 2x^2 + 3x$ has a tangent at the point (1, $a + 1$) whose slope is 5. Find where the tangent meets the curve again.

6. Solve: $|x - 1| \geq 2x - 5$

7. a) For which interval is $|2x + 5| - |x + 1| \geq 0$
b) Find the domain, range of the function $f(x) = |2x + 5| - |x + 1|$

8. Solve for x
 - a) $x(x - 2)^{\frac{-1}{3}} - 2(x - 2)^{\frac{2}{3}} = 4 - x$
 - b) $\sqrt{2x + 5} - \sqrt{x - 1} = 2$
 - c) $\sqrt{2x + 5} - \sqrt{x - 1} < 2$

9. When a quartic polynomial function $P(x)$ is divided by $x^2 - 3x + 7$, the quotient is $x^2 + x - 1$ but the remainder is unknown. However, when the same function $P(x)$ is divided by $x - 2$, the remainder is 29 and when it is divided by $x + 1$, the remainder is -16. Find the equation of $P(x)$.