ICM-Major assessment -PRACTICE

Lines, Parabolas, and Exponents

Please show your work, it is the only way to award partial credit.

1. Find the gradient of the line containing the points (3, -4) and (-2, 7). (4pt)

2. Find the midpoint of the line segment with endpoints (1,3) and (-5, -2).(2pt)

3. Find the gradient intercept form of the line which passes through the points (3,-4) and (-2,7).(4pt)

4. Find the slope of a line that is perpendicular to $3x - 2y = 5$ **.(2pt)**

5. Simplify (4pt)

$(xy)^{-2}(2x^3y)^{-5}$

6. Simplify (4pt)

$\frac{2a^{-4}}{b^{-1}}(-ac^{-3})^4$

7. The height (in meters) of an object projected into the air is given by $h = 4t - 2t^2$, Calculate the maximum height. (2 pt)

8. Find the intercepts of $y = 2x^2 + 5x - 4$

a) X intercept (4pt)

b) Y intercept(2pt)

9. Find the points of intersection of $y = 1 + x^3$ and $y = 4 - 3x$. (4pt)

10. Find the minimum value of $f(x) = x^4 + x^2 + x + 4$. (2pt)

11. Find the points of intersection between $y = 2^x$ and $y = x^2 - 6x - 3$ (4pt)