

King Fahd University of Petroleum & Minerals
Department of Mathematics and Statistics

Math 102-16-Term142-Quiz.2

Name: _____ ID: _____ Serial#: _____

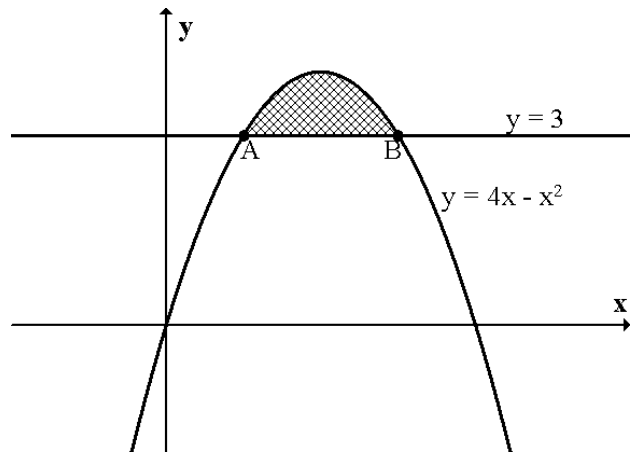
Solve all problems. Write clearly. Points will be deducted for messy work.

You must submit your work on Thursday 19 during class.

Area Between two Curves

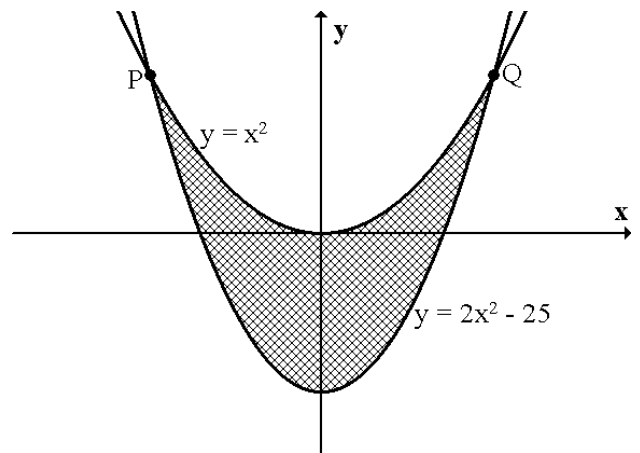
1. The diagram opposite shows the curve $y = 4x - x^2$ and the line $y = 3$.

- (a) Find the coordinates of A and B.
 (b) Calculate the shaded area.



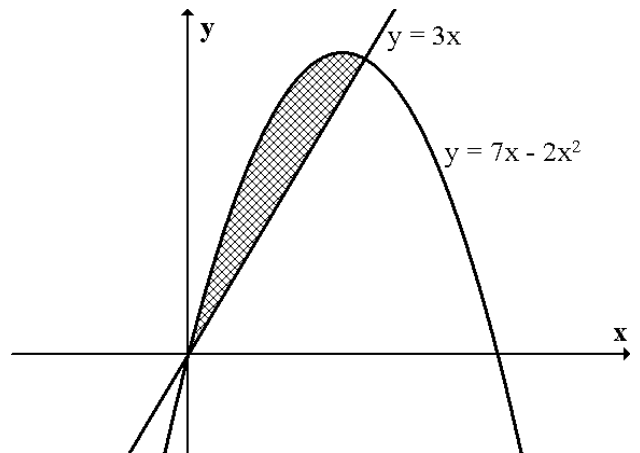
2. The curves with equations $y = x^2$ and $y = 2x^2 - 25$ intersect at P and Q.

Calculate the area enclosed between the curves.



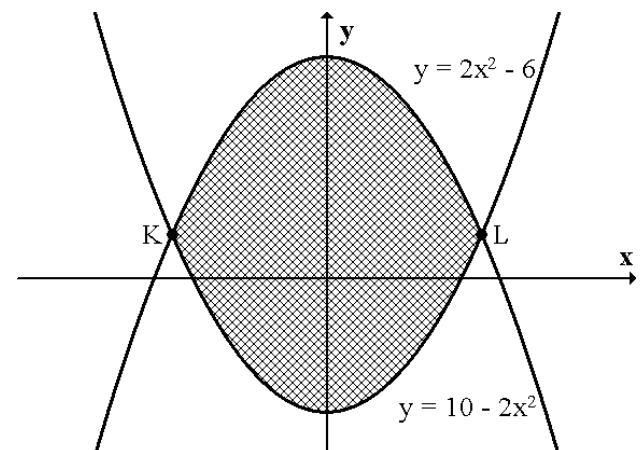
3. The diagram opposite shows the curve $y = 7x - 2x^2$ and the line $y = 3x$.

Calculate the shaded area.



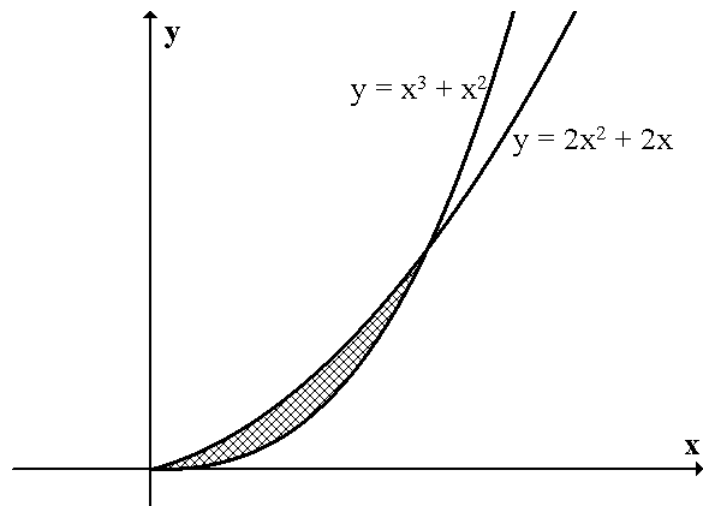
4. The curves with equations $y = 2x^2 - 6$ and $y = 10 - 2x^2$ intersect at K and L.

Calculate the area enclosed by these two curves.



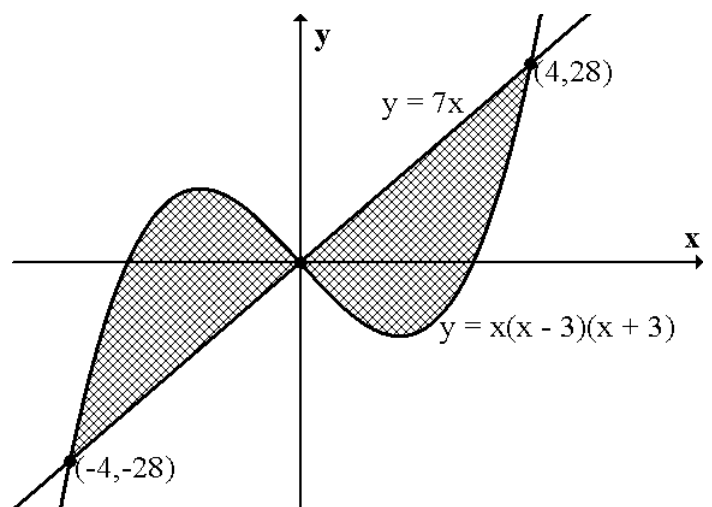
5. The diagram opposite shows part of the curves $y = x^3 + x^2$ and $y = 2x^2 + 2x$.

Calculate the shaded area.



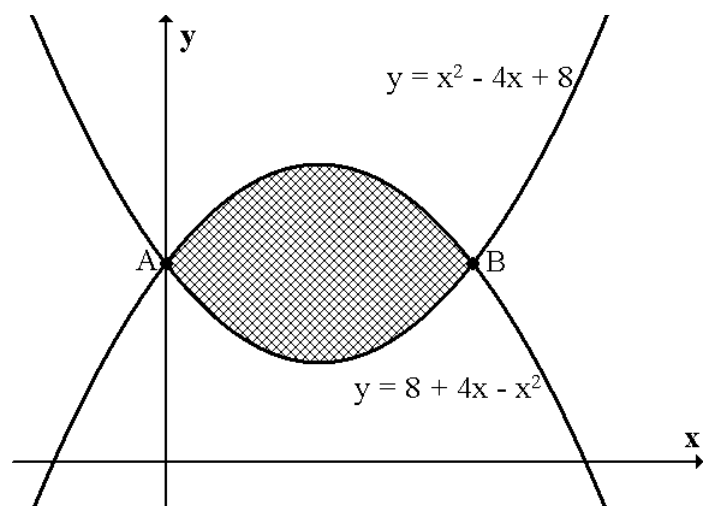
6. The curve $y = x(x - 3)(x + 3)$ and the line $y = 7x$ intersect at the points $(0,0)$, $(-4,-28)$ and $(4,28)$.

Calculate the area enclosed by the curve and the line.



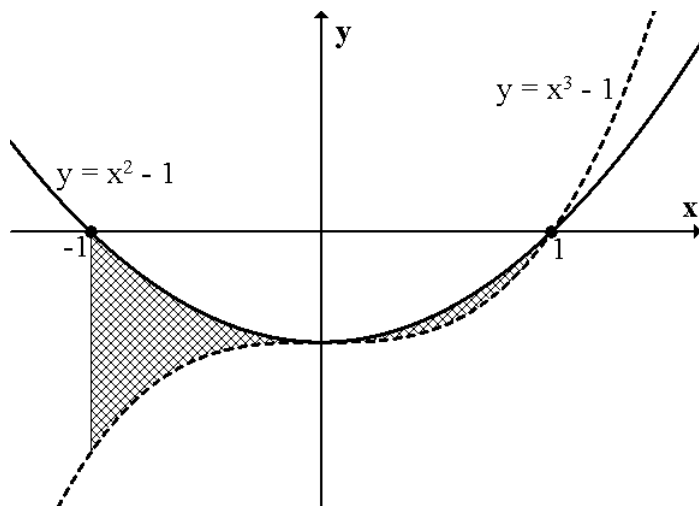
7. The parabolas $y = x^2 - 4x + 8$ and $y = 8 + 4x - x^2$ intersect at A and B.

- (a) Find the coordinates of A and B.
 (b) Calculate the shaded area.



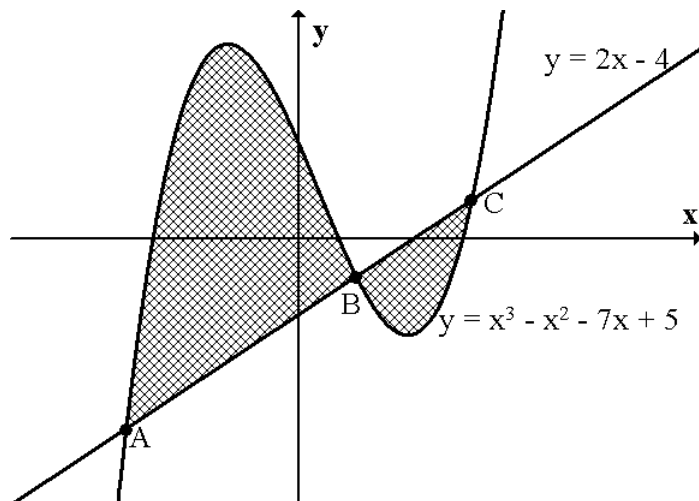
8. The diagram shows parts of the curves $y = x^3 - 1$ and $y = x^2 - 1$.

Calculate the shaded area.



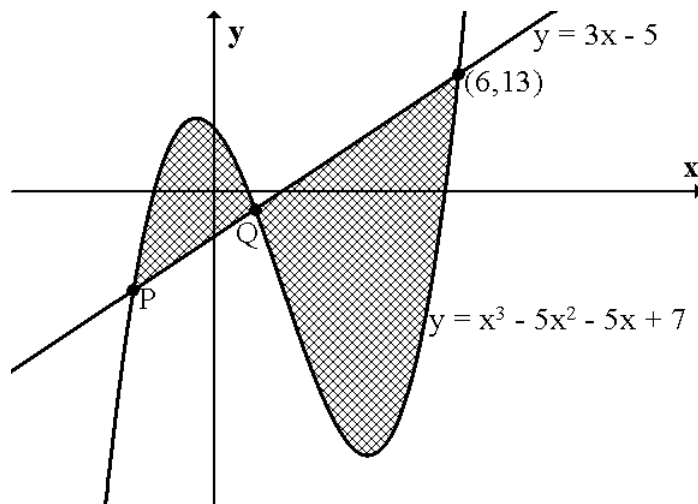
9. The curve $y = x^3 - x^2 - 7x + 5$ and the line $y = 2x - 4$ are shown opposite.

- (a) B has coordinates $(1, -2)$. Find the coordinates of A and C.
 (b) Hence calculate the shaded area.



10. The diagram shows the line $y = 3x - 5$ and the curve $y = x^3 - 5x^2 - 5x + 7$.

- (a) Find the coordinates of P and Q.
 (b) Calculate the shaded area.



11. The diagram opposite shows an area enclosed by 3 curves:

$$y = x(x + 3), \quad y = \frac{4}{x^2} \quad \text{and} \quad y = x - \frac{1}{4}x^2$$

- (a) P and Q have coordinates $(p, 4)$ and $(q, 1)$.
 Find the values of p and q.

- (b) Calculate the shaded area.

