Integration Exam Questions

Find $\int (1+\cos 2x + e^{3x})dx$.

Find $\int \left(6x+3+\frac{1}{x^2}\right)dx.$

Find $\int (2x+\cos 3x)dx$.

Find **(i)** $\int \sqrt{x}dx$ **(ii)** $\int e^{-2x}dx.$

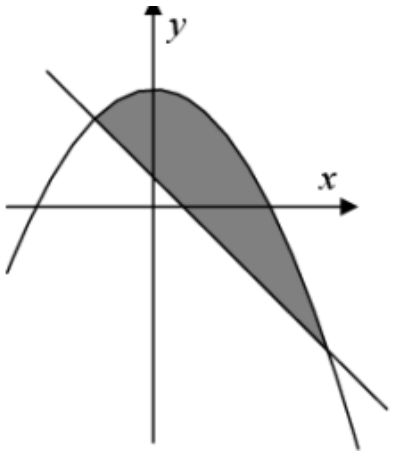
Find **(i)** $\int (2+x^3)dx$ **(ii)** $\int e^{3x}dx.$

Find $\int \left(x^3+\sqrt{x}\right)dx$.

Find **(i)** $\int x^3 dx$ **(ii)** $\int \frac{1}{x^3}dx.$

The diagram shows the curve $y = 4 - x^2$ and the line $2x + y - 1 = 0$.

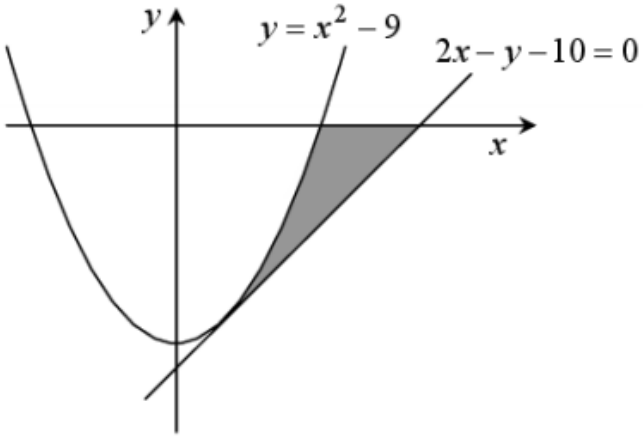
Calculate the area of the shaded region enclosed by the curve and the line.



The line $2x - y - 10 = 0$ is a tangent to the curve $y = x^2 - 9$, as shown.

The shaded region is bounded by the line, the curve and the x-axis.

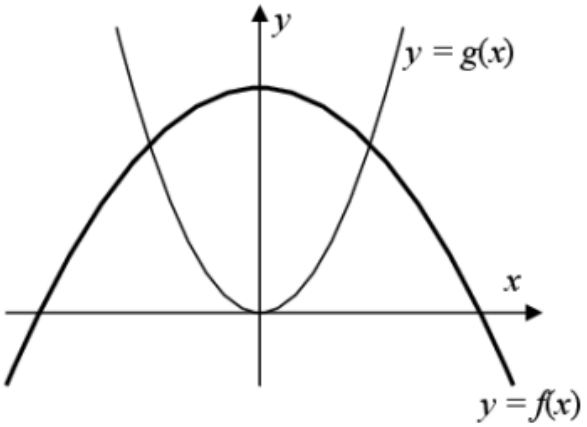
Calculate the area of this region.



The diagram shows the graphs of the curves $y = f(x)$ and $y = g(x)$, where $f(x) = 12 - 3x^2$ and $g(x) = 9x^2$.

(i) Calculate the area of the region enclosed by the curve $y = f(x)$ and the x-axis.

(ii) Show that the region enclosed by the curves $y = f(x)$ and $y = g(x)$ has half that area.



Find $\int \left(\sin 2x + e^{4x}\right) dx$.

The curve $y = 12x^3 - 48x^2 + 36x$ crosses the x-axis at $x = 0$, $x = 1$ and $x = 3$, as shown.

Calculate the total area of the shaded regions enclosed by the curve and the x-axis.