(1) Evaluate $\int_0^{\pi/2} \sin^3 x \cos^2 x \, dx$

(2) Evaluate $\int \sqrt{16-x^2} \, dx$

(3) Find the side lengths & angles of the triangle w/ vertices at:
$$\vec{A} = (1,2,0)$$
$$\vec{B} = (1,0,3)$$
$$\vec{C} = (0,2,3)$$

(4) A fly completes a circle of radius 3cm in 2 seconds. Find $\vec{r}(t)$, $\vec{v}(t)$, and $\vec{a}(t)$ for this path.

(5) Solve $z^3 = 1$. Express the answers in both rectangular & polar forms.

⑥ Find a 2nd order linear homog. diffEq which has
$$f(t) = 5e^{-t} - 6e^{-2t}$$
as a solution.

⑦ For which values of C do the solutions to
$$f''(t) + 8f'(t) + C \cdot f(t) = 0$$
involve sines & cosines?

⑧ Evaluate:

a) $\sum_{n=1}^{\infty} n \cdot x^n$

b) $\sum_{n=1}^{\infty} \frac{1}{n} x^n$