Review for Mid chapter 4

Solve the differential equation
$\frac{dy}{dx} = \frac{5}{x^4} + 9x^4$, $x > 0$.

A) $y = \frac{-5}{3x^3} + \frac{9}{5}x^5 + C$ B) $y = \frac{-1}{x^5} + \frac{9}{5}x^5 + C$

C) $y = \frac{-1}{x^5} + 3x^3 + C$ D) $y = \frac{-5}{3x^3} + 3x^3 + C$

True or False: An antiderivative of $6 \sin^2 3x$ is
$3x + \frac{1}{2} \cos 6x + C$.

Find an equation for the graph that passes through the point (1, 5) with slope -2 given that
$\frac{d^2y}{dx^2} = \frac{2x}{7}$.

A) $y = \frac{1}{21}x^3 - \frac{13}{7}x + \frac{149}{21}$ B) $y = \frac{1}{21}x^3 - \frac{15}{7}x + \frac{145}{21}$

C) $y = \frac{1}{21}x^3 - \frac{15}{7}x + \frac{149}{21}$ D) $y = \frac{1}{21}x^3 - \frac{13}{7}x + \frac{145}{21}$

Evaluate $\int -5x^2(-6 - 3x^3)^5 \, dx$.

A) $\frac{5}{2}(-6 - 3x^3)^6 + C$ B) $\frac{15}{2}(-6 - 3x^3)^6 + C$

C) $\frac{5}{54}(-6 - 3x^3)^6 + C$ D) $\frac{5}{162}(-6 - 3x^3)^6 + C$

Evaluate $\int 6 \sin^2 \frac{5x}{7} \cos \frac{5x}{7} \, dx$.

A) $\frac{14}{5} \sin^3 \frac{5x}{7} + C$ B) $-\frac{14}{5} \sin^3 \frac{5x}{7} + C$

C) $\frac{10}{7} \sin^3 \frac{5x}{7} + C$ D) $-\frac{10}{7} \sin^3 \frac{5x}{7} + C$

Evaluate $\int \frac{5x^4}{\sqrt{1 - 3x^5}} \, dx$.

Evaluate $\int \sqrt{\tan^7 2x} \sec^2 2x \, dx$.