AP Calculus BC Quiz, 8.3-8.5 Name: Block: A Seat:

1. Find the indefinite integral

$$\int \cos x \sin^4 x \; dx$$

(a) $\frac{\cos^4 x}{4} + C$

(b) $-\frac{\cos^5 x}{5} + C$

(c) $\frac{\sin^5 x}{5} + C$

(d) $-\frac{\sin^5 x}{5} + C$

(e) $\frac{\sin^4 x}{4} + C$

2. Find the indefinite integral

$$\int \cos^3(2x) \sin^2(2x) \; dx$$

(a) $\frac{\sin(2x)}{10}\left(5\sin^2(2x) - 3\sin^4(2x)\right) + C$

(b) $\frac{\sin(2x)}{30}\left(4 - 5\sin^2(2x) + 3\sin^4(2x)\right) + C$

(c) $\frac{\sin(2x)}{30}\left(5\sin^2(2x) - 3\sin^4(2x)\right) + C$

(d) $\frac{\sin(2x)}{10}\left(4 - 5\sin^2(2x) + 3\sin^4(2x)\right) + C$

(e) $\frac{\sin(2x)}{30}\left(4 - 5\sin^2(2x) + 3\sin^4(2x)\right) + C$

3. Write the form of the partial fraction decomposition for the following rational expression:

$$\frac{-5}{x^2+5x}$$

(a) $\dfrac{A}{x^2}+\dfrac{B}{5x}$

(b) $\dfrac{A}{x}+\dfrac{B}{x+5}$

(c) $\dfrac{A}{x^2}+\dfrac{B}{x+5}$

(d) $\dfrac{Ax+B}{x^2}+\dfrac{B}{x+5}$

(e) $\dfrac{Ax+B}{x^2}+\dfrac{B}{5x}$

4. Find the indefinite integral

$$\int \frac{13x-109}{x^2-13x+30}\,dx$$