Integration Techniques Practice

Name_____

Compute each integral and give the technique used to compute it. For the derivatives, name the rule you are using to differentiate it (e.g., power rule, product rule, etc.).

Question 1. (a) $\displaystyle\int \frac{2x}{\sqrt{4-9x^2}}dx$ $\qquad$ (b) $\displaystyle\int \frac{2}{\sqrt{4-9x^2}}dx$ $\qquad$ (c) $\displaystyle\int \frac{2+x}{\sqrt{4-9x^2}}dx$

Question 2. (a) $\displaystyle\int_0^{\ln 2} \frac{e^t}{1+e^{2t}}dt$ $\qquad$ (b) $\displaystyle\int \frac{e^{2x}}{1+e^{2t}}dx$ $\qquad$ (c) $\displaystyle\int_0^5 \frac{e^t}{(1+e^t)^2}dt$

Question 3. (a) $\displaystyle\int xe^x dx$

(b) $\displaystyle\int xe^{x^2} dx$

(c) $\displaystyle\int_0^{\frac{\pi}{3}} \sin(2x)\cos(2x)dx$

Question 4. (a) $\dfrac{d}{dx}\left[(1+e)^x\right]$

(b) $\dfrac{d}{dx}\left[(1+x)^e\right]$

(c) $\dfrac{d}{dx}\left[(1+x)^x\right]$