1. The number of degrees in an angle of $\frac{23\pi}{4}$ radians is

(a) $700°$ (b) $1035°$ (c) $900°$ (d) $1020°$ (e) $180°$

2. The radian measure of an angle of $-690°$ is

(a) $-\frac{11\pi}{6}$ (b) $-\frac{\pi}{6}$ (c) $-\frac{25\pi}{6}$ (d) $-\frac{23\pi}{6}$ (e) $-\frac{27\pi}{6}$

3. $\cos(600°) =$

(a) $\frac{\sqrt{3}}{2}$ (b) $-\frac{\sqrt{3}}{2}$ (c) $\frac{1}{\sqrt{2}}$ (d) $-\frac{1}{2}$ (e) $-\frac{1}{\sqrt{2}}$

4. If $f(x) = \sin(\pi e^x)$ then $f'(0) =$

(a) π (b) 0 (c) $-\pi$ (d) e^{π} (e) πe

5. $\int \frac{\cos\sqrt{x}}{\sqrt{x}}\, dx =$

(a) $2\frac{\sin\sqrt{x}}{\sqrt{x}} + c$ (b) $-2\sin\sqrt{x} + c$ (c) $\frac{2}{3}(\sin x)^{\frac{3}{2}} + c$

(d) $2\sin\sqrt{x} + c$ (e) $\frac{2}{3}(\cos x)^{\frac{3}{2}} + c$

6. $\int \frac{(\ln x)^{\frac{3}{2}}}{x}\, dx =$

(a) $\frac{5}{2}(\ln x)^{\frac{5}{2}} + c$ b) $3 \ln x + c$ (c) $\frac{3}{2}(\ln x)^{2} + c$

(d) $\frac{2}{5}(\ln x)^{\frac{5}{2}} + c$ (e) $2(\ln x)^{\frac{1}{2}} + c$

7. $\int_0^2 \frac{x}{\sqrt{2x^2 + 1}}\, dx =$

(a) 1 (b) $\frac{2}{3}$ (c) $\sqrt{3}$ (d) 3 (e) $\frac{1}{\sqrt{3}}$

8. A solid of revolution is obtained by rotating the part of the graph of $f(x) = \sqrt{\cos x}$ between $x = -\frac{\pi}{2}$ and $x = \frac{\pi}{2}$ around the x-axis. Its volume is:

(a) π (b) 0 (c) 2π (d) $-\pi$ (e) $\sqrt{\pi}$

9. Find the antiderivative $F(x)$ of $f(x) = 2xe^{x^2-1}$ for which $F(1) = 3$.

(a) $2e^{x^2-1} + 1$ (b) $4e^{x^2-1} - 1$ (c) $3e^{x^2-1}$ (d) $e^{x^2-1} + 2$
(e) $e^{x^2-1} + x + 1$

10. The slope of the tangent line to the curve $y = \text{Cos}\left[\frac{\pi}{2}(x^2 - 1)\right]$ at the point $x = 2,\ y = 0$ is

(a) π (b) 0 (c) 2π (d) 3π (e) 4π

11. In the figure at the left the shaded region is bounded by the graph of $f(x) = 4x$ and $g(x) = x^3$. Express the total area of the region in terms of an integral or integrals. Do not evaluate.

(a) $\int_{-2}^{2} (x^3 - 4x)\,dx$

(b) $\int_{-0}^{1} (4x - x^3)\,dx + \int_{-1}^{0} (x^3 - 4x)\,dx$

(c) $\int_{0}^{2} (4x - x^3)\,dx + \int_{-2}^{0} (x^3 - 4x)\,dx$

(d) $\int_{-1}^{1} (x^3 - 4x)\,dx$

(e) $\int_{-1}^{0} (4x - x^3)\,dx + \int_{0}^{1} (x^3 - 4x)\,dx$

12. A car travels with velocity (in miles per hour) given by

$v(t) = 9t^2 + 30t.$

What is the average velocity in miles per hour of the car during the first two hours of travel?

(a) 39 (b) 40 (c) 42 (d) 32 (e) 19.5

13 On a small planet the acceleration due to gravity near the surface is 10 ft/sec^2. A person throws a rock upward with velocity 20 ft/sec.

a. What is the velocity at any time?

answer _____

b. How high does the rock go?

answer _____