The 3rd Quiz of Calculus 0326

1.(20%) (1). $\int\left(x^{\frac{3}{2}}+2x+1\right)dx$ (2). $\int\left(\sec^2 x-e^x\right)dx$

2. (20%) Find the area of the region bounded by $y=5x^2+2$, $x=0$, $x=2$ and $y=0$.

3. (20%) $\frac{d}{dx}\left(\int_x^{x+2}\sin\left(t^2\right)dt\right)$

4. (30%) (1). $\int_1^5 \frac{x}{\sqrt{2x-1}}\,dx$ (2). $\int \frac{1}{\theta^2}\cos\frac{1}{\theta}\,d\theta$

5. (10%) Show that $\int_0^{\frac{\pi}{2}} \frac{\sqrt{\sin x}}{\sqrt{\sin x}+\sqrt{\cos x}}\,dx = \frac{\pi}{4}$.