班級：二技機械一甲　　學號：9680/070　　姓名：吳秉寬

科目：工程數學　　教師：

1.求解 $\frac{d}{dx}x^2+3x^2+4x+5$

Sol：

$=(2)x^{(2)-(1)}+3\times(2)x^{(2)-(1)}+4\times(1)x^{(1)-(0)}+5\times(0)$

$=(2)x^{(1)}+(6)x^{(1)}+(4)x^{(1)}$

2.求解 $\frac{d}{dx}\sqrt{x}+2\sqrt[3]{x}$

sol：$=\frac{d}{dx}x^{-(\frac{1}{2})}+2x^{\frac{(1)}{(3)}}$

$=(-\frac{1}{2})x^{(-\frac{1}{2}-1)}+2\times(\frac{1}{3})x^{\frac{1}{3}-1}$

$=(-\frac{1}{2})x^{(\frac{3}{2})}+(\frac{2}{3})x^{(-\frac{2}{3})}$

3.求解 $\frac{d}{dx}\sin x+x^5+\sqrt{x}$

4. 求解 $\frac{d}{dx}\sin(x^2+3x+5)$

5.求解 $\int(x^3+2x+1)dx$

Sol：$=\frac{1}{(3)+(1)}x^{(3)+1}+2\times\frac{1}{(1)+(1)}x^{(1)+1}+x+c$

$=(\frac{1}{4})x^{(4)}+(1)x^{(2)}+x+c$

6. 求解 $\int(\sqrt{x}+\sqrt[3]{x})dx$

$=\int(x^{\frac{1}{(2)}}+x^{\frac{1}{(3)}})dx$

$=\frac{1}{(\frac{1}{2})+1}x^{(\frac{1}{2})+1}+\frac{1}{(\frac{1}{3})+1}x^{(\frac{1}{3})+1}+c$

$=(\frac{2}{3})x^{(\frac{1}{2})}+(\frac{3}{4})x^{(\frac{4}{3})}+c$

7. 求解 $\int(xe^{x^2})dx$

8. 求解 $\int\frac{e^x}{1+e^x}dx$

9.求解 $\frac{d}{dx}=x+\frac{1}{x}, y(1)=1$

10. 求解 $y'+2y=0$

Sol $\frac{dy}{dx}+2y=0$

$\frac{dy}{dx}=>\frac{1}{y^2}dy+2dx=0$

$\int\frac{1}{y^2}dy+\int 2dx=0$

$-\frac{1}{y}+\frac{1}{2+1}x^{0+1}+c=0$

$-\frac{1}{y}+\frac{1}{3}x+c=0$

班級：二技機械一甲　　學號：600601031　　姓名：王誠鴻

科目：工程數學　　教師：

1.求解 $\frac{d}{dx}x^2+3x^2+4x+5$

Sol：

$=(2)x^{(2)-(1)}+3\times(2)x^{(2)-(1)}+4\times(1)x^{(1)-(1)}+5\times(0)$

$=(2)x^{(1)}+(6)x^{(1)}+(4)x^{(0)}$

2.求解 $\frac{d}{dx}\sqrt{x}+2\sqrt[3]{x}$

sol：$=\frac{d}{dx}x^{-(\frac{1}{2})}+2x^{\frac{(1)}{(3)}}$

$=(\frac{d}{dx})x^{(-\frac{1}{2})}+2\times(3)x^{(-\frac{2}{3})}$

$=(\frac{d}{dx})x^{(-\frac{1}{2})}+(6)x^{(-\frac{2}{3})}$

3.求解 $\frac{d}{dx}\sin x+x^5+\sqrt{x}$

$=[\cos(x+x^5+\sqrt{x})]\cdot\frac{d}{dx}(x+x^5+\sqrt{x})$

$=[\cos(x+x^5+\sqrt{x})]\cdot(1+4x^4+x^{-\frac{1}{2}})$

4. 求解 $\frac{d}{dx}\sin(x^2+3x+5)$

$=[\cos(x^2+3x+5)]-\frac{d}{dx}(x^2+3x+5)$

$=[\cos(x^2+3x+5)]\cdot(2x+3)$

5.求解 $\int(x^3+2x+1)dx$

Sol：$=\frac{1}{(1)+(1)}x^{(3)+1}+2\times\frac{1}{(2)+(1)}x^{(1)+1}+x+c$

$=(\frac{1}{2})x^{(4)}+(1)x^{(2)}+x+c$

6. 求解 $\int(\sqrt{x}+\sqrt[3]{x})dx$

$=\int(x^{(\frac{1}{2})}+x^{(\frac{1}{3})})dx$

$=\frac{1}{(1)+1}x^{(\frac{1}{2})+1}+\frac{1}{(1)+1}x^{(\frac{1}{3})+1}+c$

$=(\frac{1}{2})x^{(\frac{1}{2})}+(\frac{1}{2})x^{(\frac{1}{3})}+c$

7. 求解 $\int(xe^{x^2})dx$

8. 求解 $\int\frac{e^x}{1+e^x}dx$

9.求解 $\frac{d}{dx}=x+\frac{1}{x}, y(1)=1$

10. 求解 $y'+2y=0$

班級：二技機械一甲　　學號：10060128　　姓名：陳財元

科目：工程數學　　教師：

1.求解 $\frac{d}{dx}x^2+3x^2+4x+5$

Sol：

$=(1)x^{(2)-(1)}+3\times(1)x^{(2)-(1)}+4\times(3)x^{(4)-(1)}+5\times(1)$

$=(1)x^{(1)}+(3)x^{(1)}+(4)x^{(1)}$

2.求解 $\frac{d}{dx}\sqrt{x}+2\sqrt[3]{x}$

sol：$=\frac{d}{dx}x^{-(\frac{1}{2})}+2x^{\frac{(1)}{(3)}}$

$=(\frac{1}{2})x^{(\frac{1}{2})}+2\times(\frac{1}{3})x^{(\frac{2}{3})}$

$=(\frac{1}{2})x^{(\frac{1}{2})}+(\frac{2}{3})x^{(-\frac{2}{3})}$

3.求解 $\frac{d}{dx}\sin x+x^5+\sqrt{x}$

$=[\cos(x^5+x^{\frac{1}{2}})\cdot\frac{d}{dx}(x^5+x^{\frac{1}{2}})$

$=[\cos(x^5+x^{\frac{1}{2}})](5x^4+\frac{1}{2}x^{-\frac{1}{2}})$

4. 求解 $\frac{d}{dx}\sin(x^2+3x+5)$

$=[\cos(x^2+3x+5)]\cdot\frac{d}{dx}(x^2+3x+5)$

$=[\cos(x^2+3x+5)](2x+3)$

5.求解 $\int(x^3+2x+1)dx$

Sol：$=\frac{1}{(3)+(1)}x^{(3)+1}+2\times\frac{1}{(1)+(1)}x^{(1)+1}+x+c$

$=(\frac{1}{3})x^{(3)}+(\frac{1}{2})x^{(2)}+x+c$

6. 求解 $\int(\sqrt{x}+\sqrt[3]{x})dx$

$=\int(x^{\frac{1}{(2)}}+x^{\frac{1}{(3)}})dx$

$=\frac{1}{(\frac{1}{2})+1}x^{(\frac{1}{2})+1}+\frac{1}{(\frac{1}{3})+1}x^{(\frac{1}{3})+1}+c$

$=(\frac{2}{3})x^{(\frac{1}{3})}+(\frac{3}{4})x^{(\frac{4}{3})}+c$

7. 求解 $\int(xe^{x^2})dx$

8. 求解 $\int\frac{e^{x^2}}{1+e^x}dx$

9.求解 $\frac{d}{dx}=x+\frac{1}{x}$, $y(1)=1$

10. 求解 $y'+2y=0$

班級：二技機械一甲　　學號：9581001 9　　姓名：[illegible]

科目：工程數學　　教師：林金柱

1.求解 $\frac{d}{dx}x^2+3x^2+4x+5$

Sol：

$=(2)x^{(2)-(1)}+3\times(2)x^{(2)-(1)}+4\times(0)x^{(1)-(1)}+5\times(0)$

$=(2)x^{(1)}+(6)x^{(1)}+(4)x^{(0)}$

2.求解 $\frac{d}{dx}\sqrt{x}+2\sqrt[3]{x}$

sol：$=\frac{d}{dx}x^{(\frac{1}{2})}+2x^{(\frac{1}{3})}$

$=(\frac{1}{2})x^{(-\frac{1}{2})}+2\times(\frac{1}{3})x^{(-\frac{1}{3})}$

$=(\frac{1}{2})x^{(-\frac{1}{2})}+(\quad)x^{(-\frac{1}{3})}$

3.求解 $\frac{d}{dx}\sin x+x^5+\sqrt{x}$

4. 求解 $\frac{d}{dx}\sin(x^2+3x+5)$

$f(x)=\frac{d}{dx}\sin(x^2+3x+5)$

$=[\cos(x^2+3x+5)]\frac{d}{dx}(x^2+3x+5)$

$=[\cos(x^2+3x+5)](2x+3)$

5.求解 $\int(x^3+2x+1)dx$

Sol：$=\frac{1}{(3)+(1)}x^{(3)+1}+2\times\frac{1}{(1)+(1)}x^{(1)+1}+x+c$

$=(\frac{1}{4})x^{(4)}+(\quad)x^{(2)}+x+c$

6. 求解 $\int(\sqrt{x}+\sqrt[3]{x})dx$

$=\int(x^{(\frac{1}{2})}+x^{(\frac{1}{3})})dx$

$=\frac{1}{(\frac{1}{2})+1}x^{(\frac{1}{2})+1}+\frac{1}{(\frac{1}{3})+1}x^{(\frac{1}{3})+1}+c$

$=(\quad)x^{(\frac{3}{2})}+(\quad)x^{(\quad)}+c$

7. 求解 $\int(xe^{x^2})dx$

8. 求解 $\int\frac{e^{x^2}}{1+e^x}dx$

9.求解 $\frac{d}{dx}=x+\frac{1}{x}, y(1)=1$

10. 求解 $y'+2y=0$

班級：二技機械一甲　　學號：10066027　　姓名：施濬瀚

科目：工程數學　　教師：

54

1.求解 $\frac{d}{dx}x^2+3x^2+4x+5$

Sol：

$=(2)x^{(2)-(1)}+3\times(1)x^{(2)-(1)}+4\times(1)x^{(1)-(1)}+5\times(0)$

$=(2)x^{(1)}+(6)x^{(1)}+(4)x^{(1)}$

9

2.求解 $\frac{d}{dx}\sqrt{x}+2\sqrt[3]{x}$

sol：$=\frac{d}{dx}x^{-(\frac{1}{2})}+2x^{\frac{(1)}{(3)}}$

$=(\frac{1}{2})x^{(-\frac{1}{2})}+2\times(\frac{1}{3})x^{(\frac{2}{3})}$

9 $=(\frac{1}{2})x^{(-\frac{1}{2})}+(\frac{2}{3})x^{(-\frac{2}{3})}$

3.求解 $\frac{d}{dx}\sin x+x^5+\sqrt{x}$

$\frac{d}{dx}\sin x+x^5+x^{\frac{1}{2}}$

$=\{\cos(x^5+x^{\frac{1}{2}})\cdot\frac{d}{dx}(x^5+x^{\frac{1}{2}})$

$=\{\cos(x^5+x^{\frac{1}{2}})\}(5x^4+\frac{1}{2}x^{-\frac{1}{2}})$

4. 求解 $\frac{d}{dx}\sin(x^2+3x+5)$

Sol：$\frac{d}{dx}\sin(x^2+3x+5)$

10 $=\{\cos(x^2+3x+5)\}\cdot\frac{d}{dx}(x^2+3x+5)$

$=\{\cos(x^2+3x+5)\}(2x+3)$

5.求解 $\int(x^3+2x+1)dx$

Sol：$=\frac{1}{(3)+(1)}x^{(3)+1}+2\times\frac{1}{(1)+(1)}x^{(1)+1}+x+c$

8 $=(\frac{1}{3})x^{(3)}+(\frac{1}{2})x^{(2)}+x+c$

6. 求解 $\int(\sqrt{x}+\sqrt[3]{x})dx$

$x^{\frac{1}{2}}$

$=\int(x^{\frac{1}{(2)}}+x^{\frac{1}{(3)}})dx$

8 $=\frac{1}{(\frac{1}{2})+1}x^{(\frac{1}{2})+1}+\frac{1}{(\frac{1}{3})+1}x^{(\frac{1}{3})+1}+c$

$=(\frac{2}{3})x^{(\frac{3}{2})}+(\frac{3}{4})x^{(\frac{4}{3})}+c$

7. 求解 $\int(xe^{x^2})dx$

令 $u=x$　$v=e^{2x}$

$du=dx$　$dv=2x^{2x}dx$

8. 求解 $\int\frac{e^{x^2}}{1+e^x}dx$

Sol：令 $u=1+e^x$

$du=e^{x^2}$　$=\ln(1+e^x)+C$

10 $du=2e^xdx$

$=\int\frac{du}{u}$

$=\int\frac{1}{u}du$

$=\ln u+C$

9.求解 $\frac{d}{dx}=x+\frac{1}{x}$, $y(1)=1$

10. 求解 $y'+2y=0$