Gateway Practice Exam Solutions
(Workbook p. 220-223)

February 18, 2019

1. $e^{\cos(t^4+2)} \cdot (-\sin(t^4+2)) \cdot 4t^3$

2. $(6w^{-3}+2)(18w^5+4) + (-18w^{-4})(3w^6+4w)$

3. $2^x \ln(2) + (6)(0.2)x^{-0.8} + 0 + \dfrac{3}{1+x^2}$

4. $7^x \ln(7) - 0 - 24x^{-7} + \dfrac{3}{\sqrt{1-x^2}}$

5. $e^{6x^2+\cos(2x)} \cdot (12x - \sin(2x) \cdot 2)$

6. $(-10y^{-3})(6y^3-6y) + (5y^{-2}+6)(18y^2-6)$

7. $\dfrac{1}{e^t\cos(t)+6t^5} \cdot [(e^t)(-\sin(t)) + (e^t)(\cos(t)) + 30t^4]$

8. $\dfrac{(2z^6-3)(e^{2z^6}\cdot 12z^5) - (e^{2z^6})(12z^5)}{(2z^6-3)^2}$

9. $\dfrac{(6z^2+4z)(9z^2)-(3z^3+1)(12z+4)}{(6z^2+4z)^2}$

10. $\cos(e^{2u}+3u)\cdot(e^{2u}\cdot 2+3)$

11. $\dfrac{(e^{-2x}+3)(-\sin(3x)\cdot 3)-(5+\cos(3x))(e^{-2x}\cdot(-2)+3)}{(e^{-2x}+3x)^2}$

12. $-\sin(5\ln(w))\cdot 5\dfrac{1}{w}$

13. $(2t)(\cos(e^{5t}))+(t^2)(-\sin(e^{5t})\cdot 5e^t)$

14. $4\dfrac{1}{5x}\cdot 5+0+0.8x^{-0.6}+2\dfrac{1}{\sqrt{1-x^2}}$

15. $-\sin(e^{t^2+2t})\cdot(e^{t^2+2t})\cdot(2t+2)$

16. $\dfrac{(2z+\sin(4z))(e^{5z}\cdot 5+6)-(e^{5z}+6z)(2+\cos(4z)\cdot 4)}{(2z+\sin(4z))^2}$

17. $(e^{-3z}\cdot(-3))(\sin^4(z))+(e^{-3z})(4\sin^3(z)\cdot\cos(z))$

18. $\dfrac{1}{v^4e^{-3v}+6v^5}\cdot[(4v^3)(e^{-3v})+(v^4)(e^{-3v}\cdot(-3))+30v^4]$

19. $(8v+5)(e^{-2v}-3v)+(4v^2+5v+3)(e^{-2v}\cdot(-2)-3)$

20. $3(e^t \cos(t) + 6\sin(t))^2 \cdot [(e^t)(-\sin(t)) + (e^t)(\cos(t)) + 6\cos(t)]$

21. $[-6(v^2+2)^{-7} \cdot (2v)] \cdot (\sin(3v)) + (v^2+2)^{-6}(\cos(3v) \cdot 3)$

22. $\dfrac{(6z^3 - 3z)(-\sin(e^{-2z}) \cdot e^{-2z} \cdot (-2)) - (\cos(e^{-2z})(18z^2 - 3)}{(6z^3 - 3z)^2}$

23. $5(\ln(v^6+6))^4 \cdot \dfrac{1}{v^6+6} \cdot 6v^5$

24. $\dfrac{(2x^4 - 6)[4(e^{-6x} - 2)^3 \cdot (-6e^{-6x})] - (e^{-6x} - 2)^4(8x^3)}{(2x^4 - 6)^2}$