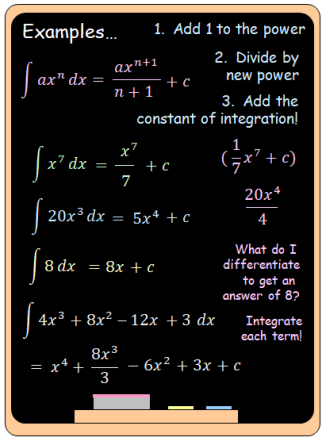
Outcome 1 – Basic Integration

Bronze examples



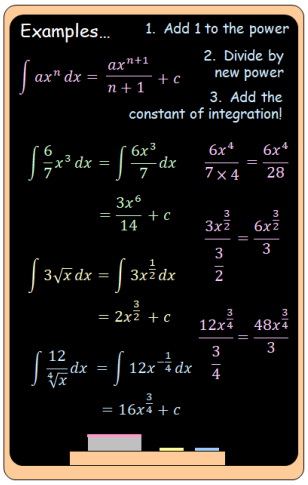
Bronze questions

Calculate the following...

1. $\int x^7\,dx$
2. $\int x^{15}\,dx$
3. $\int 2x^8\,dx$
4. $\int 9x^4\,dx$
5. $\int 3x^2\,dx$
6. $\int 25x^4\,dx$
7. $\int 9x^{-3}\,dx$
8. $\int 2x^{-3}\,dx$
9. $\int 6x^3 + 8x^2 - 16x + 5\,dx$
10. $\int 16x^3 + 6x^2 - 7x + 11\,dx$

Outcome 2 – Integration with fractions and indices

Silver examples



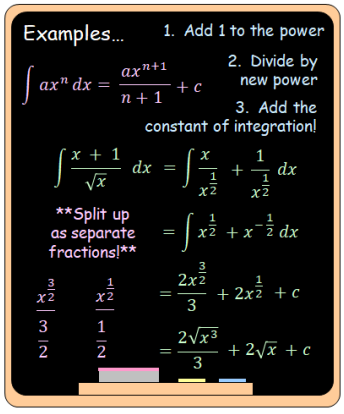
Silver questions

Calculate the following...

1. $\int x^{\frac{4}{9}}\,dx$
2. $\int \frac{2}{3}x^3\,dx$
3. $\int \frac{1}{5}x^5\,dx$
4. $\int \frac{1}{6}x^{\frac{1}{8}}\,dx$
5. $\int \sqrt[10]{x}\,dx$
6. $\int 8\sqrt[4]{x}\,dx$
7. $\int \sqrt{x^9}\,dx$
8. $\int \frac{8}{\sqrt[8]{x}}\,dx$

Outcome 3 – Harder Integration!

Gold examples



Gold questions

Calculate the following...

1. $\int \frac{x^9 + x}{x}\,dx$
2. $\int \frac{x^4 + 3}{x^2}\,dx$
3. $\int \frac{6x + 8}{x^3}\,dx$
4. $\int \frac{x - 10}{\sqrt{x}}\,dx$
5. $\int \frac{x + 4}{\sqrt[4]{x}}\,dx$
6. $\int \frac{x - 7}{\sqrt{x^5}}\,dx$

Bronze Answers

1. $\frac{x^7}{7}+c$
2. $\frac{x^{16}}{16}+c$
3. $\frac{9x^5}{5}+c$
4. $\frac{11x^8}{8}+c$
5. x^3+c
6. $5x^5+c$
7. $-\frac{9x^{-2}}{2}+c$
8. $-x^{-2}+c$
9. $\frac{3x^4}{2}+\frac{8x^3}{3}-8x^2+5x+c$
10. $4x^4+2x^3-\frac{7x^2}{2}+11x+c$

Silver Answers

1. $\frac{9x^{\frac{13}{9}}}{13}+c$
2. $\frac{x^4}{6}+c$
3. $\frac{x^6}{30}+c$
4. $\frac{4x^{\frac{9}{8}}}{27}+c$
5. $\frac{10x^{\frac{11}{10}}}{11}+c$
6. $\frac{32x^{\frac{5}{4}}}{5}+c$
7. $\frac{2x^{\frac{11}{2}}}{11}+c$
8. $\frac{64x^{\frac{7}{8}}}{7}+c$

Gold Answers

1. $\frac{x^9}{9}+x+c$
2. $\frac{x^3}{3}-\frac{3}{x}+c$
3. $-\frac{6}{x}-\frac{4}{x^2}+c$
4. $\frac{2\sqrt{x^3}}{3}-20\sqrt{x}+c$
5. $\frac{4\sqrt[4]{x^7}}{7}+\frac{16\sqrt[4]{x^3}}{3}+c$
6. $-\frac{2}{\sqrt{x}}+\frac{14}{3\sqrt{x^3}}+c$