```
Expand[Sum[1 / ((3 k - 2)^3), {k, 1, Infinity}] - Sum[1 / ((3 k - 1)^3), {k, 1, Infinity}]]
Expand[Sum[1 / ((4 k - 3)^3), {k, 1, Infinity}] - Sum[1 / ((4 k - 1)^3), {k, 1, Infinity}]]
Expand[Sum[1 / ((6 k - 4)^3), {k, 1, Infinity}] - Sum[1 / ((6 k - 2)^3), {k, 1, Infinity}]]
Expand[Sum[1 / ((6 k - 5)^3), {k, 1, Infinity}] - Sum[1 / ((6 k - 1)^3), {k, 1, Infinity}]]
Expand[Sum[1 / ((8 k - 2)^3), {k, 1, Infinity}] - Sum[1 / ((8 k - 6)^3), {k, 1, Infinity}]]
Expand[Sum[1 / ((9 k - 6)^3), {k, 1, Infinity}] - Sum[1 / ((9 k - 3)^3), {k, 1, Infinity}]]
Expand[Sum[1 / ((12 k - 2)^3), {k, 1, Infinity}] - Sum[1 / ((12 k - 10)^3), {k, 1, Infinity}]]
Expand[Sum[1 / ((12 k - 3)^3), {k, 1, Infinity}] - Sum[1 / ((12 k - 9)^3), {k, 1, Infinity}]]
Expand[Sum[1 / ((12 k - 4)^3), {k, 1, Infinity}] - Sum[1 / ((12 k - 8)^3), {k, 1, Infinity}]]
```

$$\frac{4\,\pi^3}{81\,\sqrt{3}}$$

$$\frac{\pi^3}{32}$$

$$\frac{\pi^3}{162\,\sqrt{3}}$$

$$\frac{\pi^3}{18\,\sqrt{3}}$$

$$-\frac{\pi^3}{256}$$

$$\frac{4\,\pi^3}{2187\,\sqrt{3}}$$

$$-\frac{\pi^3}{144\,\sqrt{3}}$$

$$-\frac{\pi^3}{864}$$

$$-\frac{\pi^3}{1296\,\sqrt{3}}$$