8-28-19 1st Try

① $(n+4)^2$

$(n+4)(n+4)$

$n^2+4n+4n+16$

$n^2+8n+16$

② $(2a^{-3})^{-2}$

$\left(\frac{2}{a^3}\right)^{-1\cdot 2}$

$\left(\frac{a^3}{2}\right)^2 = \frac{a^3}{2}\cdot\frac{a^3}{2} = \frac{a^6}{4}$

③ $(a^{-3}b^{-2})^{-2}$

$\left(\frac{1}{a^3b^2}\right)^{-1\cdot 2}$

$(a^3b^2)^2$

$a^3b^2 \cdot a^3b^2$

$aaabb\ aaabb = a^6b^4$

④ $(x+2)(x+2)(x+2)$

$x^2+2x+2x+4$

$(x+2)(x^2+4x+4)$

$x^3+4x^2+4x+2x^2+8x+8$

$x^3+6x^2+12x+8$

⑤ $(2s^{-2}t^3v^{-1}d)^{-2}$

$\left(\frac{2t^3d}{s^2v}\right)^{-1\cdot 2}$

$\left(\frac{s^2v}{2t^3d}\right)^2$

$\frac{s^2v}{2t^3d}\cdot\frac{s^2v}{2t^3d}=\frac{s^4v^2}{4t^6d^2}$

⑥ $\sqrt[3]{16x^4y^8}$

$16$

$4 \quad 4$

$2\ 2\ 2\ 2$

$2xy^2\sqrt[3]{2\cdot2\cdot2\cdot2\cdot x\,x\,x\,x\,y\,y\,y\,y\,y\,y\,y\,y}$

$2xy^2\sqrt[3]{2xy^2}$

⑦ $(2n^3y^4)^2 + n(n^5)y^8$

$2n^3y^4 \cdot 2n^3y^4 + n^6y^8$

$4n^6y^8 + n^6y^8$

$5n^6y^8$

⑧ $(3n^2y^4)^2 + n(n^4)y^3 \cdot y^5$

$3n^2y^4 \cdot 3n^2y^4$ + $n(nnnn)yyy$ $yyyyy$

$9n^4y^8 + n^5y^8$

⑨ $abc^2 + a^2bc + ab^2c$

simplified already

⑩ $n^{-10}y^{20} \cdot n^{15} \cdot y^{-30}$

$$\frac{y^{20}\,n^{15}}{n^{10}\,y^{30}} = \frac{n^5}{y^{10}}$$

⑪ Which digit is in $.\overline{2356}$ is in the 185th spot?

(2)

. 2 3 5 6 2 3 5 6 2 3 5 6 2 3 5 6 ...

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 ...

① .2356 4

② 2356 8

③ 2356 12

④ 2356 16

⑤ 2356 20

24

(46) 2356 184

$\frac{185}{4} = 46.25$

$46 \times 4 = 184$

(12) $\dfrac{10 + \sqrt{-8}}{4}$

$\dfrac{\overset{5}{\cancel{10}} + \overset{1}{\cancel{2}} \cdot \sqrt{2}}{\cancel{4}_2} = \dfrac{5 + i\sqrt{2}}{2}$

$\sqrt{-8}$

$2i\sqrt{(-1)\cdot(2\cdot 2)\cdot 2}$

8-28-19 3rd Trig

① $4(2n-1)-(5n-1)=12$

$8n-4-5n+1=12$

$3n-3=12$

$+3 \quad +3$

$3n=15$

$n=5$

② $(n+3)^2$

$(n+3)(n+3)$

$n^2+3n+3n+9$

$n^2+6n+9$

③ $(2a^{-4})^{-2}$

$\left(\frac{2}{a^4}\right)^{-1\cdot 2}$

$\left(\frac{a^4}{2}\right)^2 = \frac{a^4}{2}\cdot\frac{a^4}{2} =$

$\frac{aaaa}{2}\cdot\frac{aaaa}{2} = \frac{a^8}{4}$

④ $(a^{-3}b^{-2})^{-2}$

$\left(\frac{1}{a^3 b^2}\right)^{-1\cdot 2}$

$(a^3b^2)^2$

$a^3b^2 \cdot a^3b^2$

$aaabb \;\; aaabb = a^6 b^4$

⑤ $(n+2)(n+2)(n+2)$

$n^2+2n+2n+4$

$(n+2)(n^2+4n+4)$

$n^3+4n^2+4n+2n^2+8n+8$

$n^3+6n^2+12n+8$

⑥ $(2s^{-3}t^{-2}ud^{-1})^{-2}$

$\left(\frac{2u}{s^3t^2d}\right)^{-1\cdot 2}$

$\left(\frac{s^3t^2d}{2u}\right)^2$

$\frac{s^3t^2d}{2u} \cdot \frac{s^3t^2d}{2u} = \frac{s^6t^4d^2}{4u^2}$

⑦ $\sqrt[3]{16x^4y^8}$

16
4 4
2 2 2 2

$2xy^2\sqrt[3]{2\cdot2\cdot2\cdot2\cdot x\,x\,x\,x\;y\,y\,y\,y\,y\,y\,y\,y}$

$2xy^2\sqrt[3]{2xy^2}$

⑧ $\sqrt[5]{x^4y^8}$

$y\sqrt[5]{x\,x\,x\,x\;y\,y\,y\,y\,y\,y\,y\,y}$

$y\sqrt[5]{x^4y^3}$

⑨ $(2n^3y^4)^2 + n(n^5)y^8$

$2n^3y^4 \cdot 2n^3y^4 + n\cdot n^5\cdot y^8$

$4n^6y^8 + n^6y^8$

$5n^6y^8$

(10) $(3n^2y^4)^2 + n(n^4)y^3y^5$

$3n^2y^4 \cdot 3n^2y^4 + n^5y^8$

$9n^4y^8 + n^5y^8$

(11) Which digit is in the 151st spot of $.\overline{1579}$?

.1579157915791579...
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16...

1 5 7 9 4
1 5 7 9 8
1 5 7 9 12
1 5 7 9 16
Row 10 — 40
Row 37 — 9 (148)

7 151st

$\frac{151}{4} = 37.75$

37
× 4
148

(12) $(7^5 \cdot 7^2)^2$

$(7^7)^2$

$7^7 \cdot 7^7 = 7^{14}$